Appendix N

Section 7 Materials and Correspondence

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SECTION 7 MATERIALS AND CORRESPONDENCE

Illiana Corridor
Phase I Study

RESOURCE AGENCY BIOLOGICAL ASSESSMENT COORDINATION MEETING SUMMARY

Date:	**May 13, 2013**
Time:	**9:00 AM**
Location:	**U.S. Fish & Wildlife Service, 1250 Grove Street, Barrington, IL**
Attendees:	**See attached Meeting Sign-In Sheets**

The Illinois Natural History Survey (INHS) completed many of the biological surveys for the Illiana project. During the 2012 mussel surveys conducted in the Kankakee River, a fresh dead shell of the federally endangered sheepnose mussel (*Plethobasus cyphyus*) was found approximately 1,200 feet south of the B3 corridor. Because of its proximity to the preferred alignment, the Illiana project team indicated that for the purposes of coordination, it will be assumed that the sheepnose mussel is located in the corridor and therefore there is a potential for impacting the species. As a result, the project team initiated informal Section 7 Consultation with the US Fish & Wildlife Service (USFWS).

The meeting agenda for this purpose included the following discussion points:

- Introductions
- Initiation of Section 7 Consultation – sheepnose mussel
- Other Topics
    - Eastern Prairie Fringed Orchid (EPFO) Survey Locations
    - Status of Indiana Bat Mist-Net Surveys

S. Schilke and S. Ott provided a brief summary of the status of the project. J. Novak summarized the INHS mussel report which confirmed that a fresh dead shell of the federally endangered sheepnose mussel was found approximately 1,200 feet south of the proposed B3 corridor during surveys in the Kankakee River. No other federally listed mussels were identified in the project area. Because of this find and the proximity to Corridor B3, IDOT indicated that they will assume the presence of the mussel within the project limits. As a result, IDOT requested the project team to compile a Biological Assessment (BA) in anticipation of the formal Section 7 Consultation.

S. Cirton indicated that the USFWS is in the technical assistance stage of the review. The informal review begins with a review of the BA, which determines whether formal consultation is necessary. Therefore, S. Cirton stated that he needs to review the BA prior to any discussion of formal consultation.

At the time, it was not known if piers will be constructed in the Kankakee River for the bridge, which would be considered a permanent impact. All other impacts will be considered temporary for construction. J. Novak indicated that temporary impacts could

include the use of causeways constructed in the river by the contractor. At this stage, the project team will assume the worst case scenario to allow the contractor flexibility during construction. R. Powell indicated that the use of causeways is a practical method for construction of a bridge this large. It could potentially save approximately $20 million versus constructing the bridge from the shore. R. Powell indicated that coffer dams could also be used during construction.

S. Schilke indicated that the actual location of the crossing of the Kankakee River has not been finalized because of the discovery of an historic site on the east bank of the river near the preferred alignment. IDOT is currently coordinating this issue with the State Historic Preservation Officer (SHPO); however, the alignment is not expected to vary much from the current design.

S. Schilke asked if the use of piers in the river would be considered a fatal flaw. S. Cirton stated that he does not think piers would be a fatal flaw at this time. J. Novak indicated that as part of the BA, commitments will be made to conduct mussel surveys and relocate all native mussels found during the surveys prior to construction to minimize and avoid impacts.

J. Novak asked if the outline provided by USFWS should be used, since there are some variations with outlines on their website. S. Cirton indicated this outline is based on recent reviews their office has completed and the project team should follow this example. S. Cirton indicated that once he receives the BA, he has 30 days to review and comment. The USFWS has 180 days to complete the Biological Opinion if formal consultation is required.

M. Fuller indicated that the review timelines are critical as the Record of Decision cannot be signed until the Section 7 consultation is completed. M. Fuller, reviewing policy indicated that a summary of the BA and agency coordination is required for the Draft EIS. Approval of the BA for the Draft EIS is not required. Indiana uses a Limited Take Process which is somewhat different from what Illinois requires. S. Cirton said to make sure that all species listed for Will and Lake counties are included in the BA regardless of whether there are potential impacts to additional species.

S. Cirton will need to check to see if a separate BA for Illinois and Indiana will be required for the entire project since this project crosses state lines and USFWS jurisdictional offices or if a single BA document can be prepared.

Additional topics discussed concerned other federally-listed species potential involvement. For the Indiana bat, additional areas near the proposed I-65 interchange were added to the project and a 2013 survey is needed for these areas. The INHS will be conducting surveys for the additional areas in Illinois after June 1. S. Cirton has been in constant contact with the Illinois survey teams and will be working closely with them. S. Cirton indicated that there are new protocols this year on bat surveys. This information will be passed on to the survey teams. The INHS bat report will be completed by the end of July 2013.

J. Novak produced a table summarizing all wetland sites in Illinois that have floristic quality indices over 20, which is the threshold for potential surveys for the eastern prairie fringed orchid (EPFO). The table also calls out plant associates of the EPFO. S. Cirton will review the list and coordinate the locations of additional EPFO surveys. S. Hargrove indicated that the INHS has identified some basal rosettes of unidentified orchids during their surveys last year. The INHS will attempt to confirm species type during this year's survey.

S. Cirton requested a copy of the wetland delineation and botanical survey reports. IDOT directed Huff & Huff to prepare CD's for distribution to the federal agencies. J. Novak will hand deliver the document to USFWS by Wednesday, May15, 2013.

J. Novak asked about the permit information related to the JATA site and the grassland bird information. S. Cirton responded that he has the permit number, but cannot locate the entire Decision Document from the Corps of Engineers. When he gets back to his office at the Corps of Engineers, he will check further to get information on the bird mitigation.

The meeting concluded at approximately 10:30 AM.

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MEETING SIGN-IN SHEET

Date: 5/13/13

Location: US FISH + WILDLIFE BARRINGTON IL

Purpose: SECTION 7 CONSULTATION

	Name	Representing	Email Address
1.	Rick Powell	Parsons Brinckerhoff	powellw@pbworld.com
2.	Shawn Cirton	USFWS	shawn_cirton@fws.gov
3.	Jim Novak	Huff + Huff	jnovak@hoffnhuff.com
4.	Vanessa Ruiz	IDOT - D1	vanessa.ruiz@illinois.gov
5.	Steve Otts	Parsons Brinckerhoff	otts@pbworld.com
6.	KATIE KUKIELKA	AECOM/IDOT	KATIE.KUKIELKA@ILLINOIS.GOV
7.	Steve Schilke	IDOT	Steven.Schilke@illinois.gov
8.	Lailah Reich	Huff & Huff	lreich@huffnhuff.com
9.			
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14.			
15.			
16.			
REMOTE: 17.	JIM GALL	INDOT	
18.	RICK LOMPONG	PB	
19.	MATT FULLER	FNWA	
20.	KENT ANDENHOLT	DLZ	
21.	ROGER KLOCEK	HUFF + HUFF	
22.	SUE HARGROVE	IDOT	
23.	PETE KNYSZ	CBBEL	
24.			
25.			

Illiana Corridor
Phase I Study

RESOURCE AGENCY BIOLOGICAL ASSESSMENT COORDINATION MEETING SUMMARY

Date:	**October 24, 2013**
Time:	**2:00 PM**
Location:	**U.S. Fish & Wildlife Service, 1250 Grove Street, Barrington, IL**

Upon completion of the Draft Biological Assessment (BA), the project team continued informal Section 7 Consultation with the U.S. Fish & Wildlife Service (USFWS) and delivered the Draft BA to the Illinois USFWS for their review. The Illinois Department of Transportation (IDOT) provided a preliminary draft copy of the BA to the Illinois USFWS to obtain initial feedback and assist the project team in maintaining the DEIS schedule.

After introductions, S. Schilke presented the Draft BA to S. Cirton of the USFWS.

S. Schilke and J. Novak provided a brief summary of the status of the project. S. Schilke mentioned that a copy of the BA is being delivered to the Indiana USFWS office. J. Novak summarized the approach to writing the BA, stating that guidance on document formatting provided earlier by S. Cirton was utilized. Minor formatting changes were incorporated to provide additional information similar to that provided for the recent IDOT Illinois Route 22 BA for the eastern prairie fringed orchid (*Platanthera leucophaea*). J. Novak stated that the BA was prepared to assess impacts to all species in relation to the proposed Illiana Corridor listed on the USFWS Endangered Species Act: Section 7 (a)(2) website for Will County, Illinois and Lake County, Indiana (see Table ES-1 within the BA). J. Novak then summarized the Effect Determination findings for each species per Table ES-1. S. Cirton stated that the Effect Determinations within the Draft BA may change based on discussions at the meeting and after his review. S. Cirton mentioned that the status of the northern long-eared bat (*Myotis septentrionalis*) should be changed to 'proposed for listing' within the BA instead of Candidate species.

S. Cirton inquired why the northern long-eared bat Effect Determination was "not likely to adversely affect". J. Novak explained that because habitat for the northern long-eared bat is similar to the Indiana bat (*Myotis sodalis*) and based on the tree clearing restriction timeframe (October 16 to March 31), it was assumed that the impacts to the northern long-eared bat would be avoided. S. Cirton indicated that the effects determination for the northern long-eared bat should be changed. S. Cirton indicated that it could be stated as "may affect, but not likely to adversely affect", but this could change based on the USFWS review. S. Cirton indicated that bat numbers are dropping so dramatically due to white-nose syndrome that their office is now looking at protection of all habitat, including their summer habitat. Therefore, the USFWS is reassessing their stance on tree clearing as an avoidance measure for bats.

S. Cirton stated that the northern long-eared bat is actually more of a habitat generalist than the Indiana bat. L. Reich stated that the "not likely to adversely affect" determination was also based upon the distance of the closest hibernacula to the Illiana Corridor. S. Cirton stated that Blackball Mine, the closest hibernacula to the Illiana Corridor, is actually 40 miles away, which is a distance that bats travel. S. Cirton stated that the USFWS has records for the northern long-eared bat in other locations near the Illiana Corridor aside from those documented in the BA. S. Cirton also stated that no definite decision has been made regarding how minimization/avoidance of impacts to the northern long-eared bat will be handled; however, measures to minimize impacts/avoid impacts to this species will likely be similar to the Indiana bat.

S. Cirton mentioned that the USFWS bat experts are looking more closely at habitat and specific locations where the northern long-eared bat may be present in general. W. Zyznieuski stated that previous Illinois Natural History Survey (INHS) assessments for the Indiana bat within IDOT District 1 could serve as a useful tool to document the absence of the northern long-eared bat within District 1. S. Cirton reiterated that a different approach may be used for the northern long-eared bat and that tree clearing restrictions may not suffice as the primary tool for avoidance. S. Cirton stated that because of white nose syndrome, summer habitat is growing in importance and that tree clearing protocols may change.

S. Schilke asked if the tree clearing restriction does not suffice, would this change the effect determination or would it change the mitigation. S. Schilke mentioned that tree replacement could occur in areas where replacement of suitable habitat could be achieved. S. Cirton stated that young, replacement trees wouldn't really serve as habitat in the short term. S. Cirton stated that the northern long-eared bat determination would likely be changed to "likely to adversely affect" and that he will discuss this with the USFWS bat experts. S. Schilke requested input from the USFWS on how to mitigate potential impacts to the northern long-eared bat. S. Cirton reiterated avoidance of impacts to the northern long-eared bat. S. Schilke stated that 1:1 replacement of impacted trees can help to mitigate where avoidance is not possible. J. Novak mentioned that transplantation of dead mature trees with intact bark into a habitat area was a short-to-medium term mitigation measure that had been successfully used in the past.

J. Novak summarized listed species within Lake County, Indiana and mentioned Appendix M (USFWS Correspondence concerning the Indiana bat in Northeast Illinois) within the BA. J. Novak also went through the overall structure of the BA.

S. Cirton inquired about mussel surveys within the Kankakee River, specifically in relation to the sheepnose mussel (*Plethobasus cyphyus*). J. Novak stated that surveys were conducted and that a fresh dead specimen of the sheepnose was collected approximately 1,200 feet downstream of its confluence with Forked Creek during field surveys by the INHS. J. Novak also discussed measures to avoid impacts to the sheepnose mussel, which include pre-construction mussel surveys to relocate all native mussel within the stretch of the Kankakee River proposed for in-stream work, as well as

in-stream work timeframe restrictions (i.e. during the spawning timeframe of the sheepnose host fish, the sauger [*Sander canadensis*]). S. Cirton inquired about where sustainability opportunity areas are being used in relation to the sheepnose mussel and construction of the Kankakee River Bridge. S. Cirton stated that these should be identified within the BA. S. Ott mentioned that the effects evaluation utilized Best Management Practices (BMPs) outlined in the Sustainability Opportunity Areas Technical Memorandum (Christopher B. Burke Engineering, Ltd., 2013).

In addition to the BMPs that are being proposed, S. Ott mentioned that avoidance measures such as avoiding or minimizing impacts to large forested area (Forested Site 8), located east of the proposed I-65 and Illiana interchange were considered in locating the alignment alternatives relative to bat habitat protection.

S. Ott stated that an electronic Word version of the BA has been provided to S. Cirton so that he can edit or add comments directly to the document.

S. Cirton stated that he will work with the project team to come up with measures to minimize impacts to those species that may be impacted so that the formal review process is not needed. If a species is determined to be adversely affected, the formal process is required.

S. Schilke discussed the next steps for the BA process, mentioning that the USEPA has requested a copy of the BA. S. Cirton stated that the BA may be sent to the USEPA for their comment. S. Schilke stated that the DEIS will be finalized in November and inquired about the USFWS schedule for review of the BA. S. Cirton stated that it typically takes 30 days to review the draft and at that time it will be determined if formal consultation is needed. S. Cirton stated that if formal consultation is required, the USFWS has 135 days to review. S. Schilke stated that the project team would need to know if the BA will go to formal consultation by mid-November in order to include in the DEIS. S. Cirton stated that he can review the draft BA by November 15. S. Cirton also mentioned that the Indiana USFWS office will need to complete their review by November 15 as well. M. Fuller also stated that information from the BA will be included in the DEIS whether consultation is formal or informal.

IDOT and the FHWA indicated that they would like to initiate formal consultation, if required, as soon as possible to meet NEPA schedules.

The meeting concluded at approximately 3:40 PM.

Attendees:
Shawn Cirton – U.S. Fish and Wildlife Service
Matt Fuller – Federal Highway Administration
Steve Schilke – IDOT
Walter Zyznieuski – IDOT (phone)
Susan Dees Hargrove – IDOT (phone)

Felecia Hurley – IDOT (phone)
Tom Brooks – IDOT (phone)
Steve Ott – Parsons Brinkerhoff
Rick Powell – Parsons Brinkerhoff
Katie Kukielka – IDOT/AECOM
Jim Novak – Huff & Huff, Inc.
Lailah Reich – Huff & Huff, Inc.

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MEETING SIGN-IN SHEET

Date: 12/17/13

Location: USFWS FIELD OFC – BARRINGTON

Purpose: SEC 7 COORD. MTG

	Name	Representing	Email Address
1.	Rick Powell	Parsons Brinckerhoff	powellw@pbworld.com
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6.	Vanessa Wolf	IDOT	Vanessa.Wolf@illinois.gov
7.	Jim Novak	Huff + Huff	jnovak@huffnhuff.com
8.	Lailah Reich	Huff & Huff	lreich@huffnhuff.com
9.			
10.	REMOTE ATTENDEES		
11.	M. FULLER	FHWA - IL	
12.	M. ALLEN	FHWA - IN	
13.	JAN OSADCZUK	FHWA - IN	
14.	E. McCLOSKEY	USFWS - CHESTERTON IN	
15.	J. SHARULL	IDOT BDE	
16.	F. HURLEY	IDOT BDE	
17.	L. HUFF	H&H	
18.	R. FIGLUS	PB	
19.	E. LEONARD	PB	
20.	L. NILSEN	INDOT	
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Illiana Corridor
Phase I Study

RESOURCE AGENCY BIOLOGICAL ASSESSMENT COORDINATION MEETING SUMMARY

Date:	**December 17, 2013**
Time:	**10:30 AM**
Location:	**U.S. Fish & Wildlife Service, 1250 Grove Street, Barrington, IL**

Upon completion of the second draft of the Biological Assessment (BA), the project team continued informal Section 7 Consultation with the U.S. Fish & Wildlife Service (USFWS) and delivered the Draft BA to the Illinois USFWS for their review. The Illinois Department of Transportation (IDOT) has requested an informal review of the second draft of the BA to assist the project team in developing the DEIS schedule.

After introductions, S. Schilke conducted a briefing on the status of the project and provided some background on USFWS comments regarding second draft Biological Assessment. The USFWS December 13, 2013 comments to the second draft of the BA were then reviewed by all members in attendance. This work session/review of the December 13, 2013 comments are summarized below.

Eastern Massasauga (*Sistrurus catenatus*)

L. Reich indicated that a discussion on cumulative impacts to the eastern massasauga has been added to the BA per the USWFS December 13, 2013 comments to the second draft of the BA. S. Cirton said the discussion on indirect impacts to the eastern massasauga should include consideration of induced development north of the Corridor (e.g. Crete Intermodal Facility) near Plum Creek within suitable habitat for this species needs to be added to the BA. Even though Plum Creek Watershed is outside of the Corridor, indirect impacts need to be discussed based on induced growth within suitable habitat. L. Reich indicated that this will be added to the BA.

Sheepnose Mussel (*Plethobasus cyphyus*)

USFWS Comment (from December 13, 2013): The BA should explain why the area of impact for the crossing of the Kankakee River (approximately 4 acres) found in the previous draft was eliminated. The revised version currently shows that the area of temporary impact related to the causeway is approximately 2 acres of river bottom.

J. Novak stated that the reduction of direct effects to 2.0 acres was based on discussions with the project team engineers. This is based on the construction of the causeway, cofferdams, and piers within the Kankakee River.

A suggestion was made that Figure 2 be revised to call out specific acreage for the piers, causeway, cofferdam, and potential sedimentation/siltation downstream from the proposed construction activities. This revised figure will represent the "Action Area" for the sheepnose mussel. The figure also showed an area a few hundred feet downstream from the construction as an estimate of an area that may be impacted by siltation/ sedimentation downstream from the in-stream work. This was based on what had been done on other projects including Stearns Road.

S. Cirton stated that this area of a few hundred feet downstream should be appropriate, but would like a review of existing literature on this to supplement the justification of this downstream distance.

USFWS Comment (from December 13, 2013) The Driscoll model should be added to the appendices since it was used to help demonstrate that there would be no water quality impacts from road runoff. Preliminary review by our staff revealed concerns that we have in using the Driscoll model, as it relates to fully disclosing water quality impacts to the sheepnose mussel. We propose to discuss our concerns regarding the model with you at our December 17, 2013, meeting. S. Cirton presented the list of questions and went over them in general discussion.

S. Cirton stated that a colleague reviewed the Pollutant Loading Analysis, which is appended to the BA, and had specific comments to this. Comments mentioned include 1) What pollutants were considered? and 2) Were antifreeze, petroleum, glycol, etc. considered?

L. Huff responded that antifreeze was not modeled in Driscoll because there are no water quality standards for this. Glycol was not modeled either. Linda explained the constituents were modeled to meet Illinois and Indiana Water Quality Standards and that additional research may be needed from other parts of the country for standards for antifreeze.

L. Clemency mentioned that adding an additional narrative on background of Driscoll, what pollutants and why to the BA is recommended. M. Fuller added that we don't want to establish standards. L. Huff asked about water quality effects if we are implementing WQ BMPs. S. Cirton asked if cumulative effects were included in the model for water quality. L. Huff that some additional discussion is needed for indirect and cumulative, eg. synergistic effects/additive effect. This will be added to the BA.

S. Cirton asked what input values for the model? What assumptions were made? L. Huff indicated these will be provided/defined in the revised BA. Also locations of the BMPs will be added to the BA. S. Cirton wanted assurances that large storm events would not cause chronic adverse effects to water quality in streams to be conveyed within the BA. Would multi-day storm events cause exceedances and thereby cause chronic or acute adverse effects?

L. Huff indicated that the Kankakee River Watershed is not as 'flashy' as other watersheds, chronic and acute adverse effects are not anticipated.

S. Cirton said that a discussion of the model's uncertainty should be added to the BA. A comparison with field assessments could also be added.

USFWS Comment (from December 13, 2013). As noted in our December 3, 2013, letter, "The DOTs should provide specific details for the types of BMPs planned and their locations, for each stressor, to support the statement that the indirect impacts from pollutants would be offset by BMPs. Plans for BMP locations and construction should be described in the BA so that the efficacy of the BMPs in offsetting pollutant impacts can be disclosed and assessed. The DOTs should emphasize in the BA that BMPs are being implemented to address potential impacts to the Kankakee River and its tributaries within the project area.

J. Novak indicated that the location of the BMPs, project wide, will be added to Appendix F, the "Sustainability Opportunities Areas Technical Memorandum". These will also be referenced in the BA. S. Ott presented the BMP maps to USFWS that were in the Appendix F memo. They were not added to the BA because they are in the DEIS. They would technically be appended twice within the DEIS. It was recommended that a simple reference to these maps be made in the BA.

L. Clemency asked if these were the final proposed BMPs. S. Schilke said that they were not and this will be clarified in the BA. The final BMPs will be approved at the Section 404 Permitting stage.

L. Clemency and S. Cirton indicated that they will be looking for commitments regarding BMPs. Also, explain the process of Section 404 in the BA.

E. McCloskey asked how can the USFWS determine what the alternatives are from the BA as there is no discussion of the alternatives within the BA. What alternatives are 1, 2, and 3? This may be discussed in the DEIS, but they have not seen that yet. S. Ott said a discussion could be included within the BA from the DEIS to summarize alternatives. Will add narrative and table from the DEIS to explain transition from the ATCFM to DEIS.

S. Cirton asked for a discussion on the "stressors" to be added in the BA similar to what was started for the sheepnose mussel.

USFWS Comment (from December 13, 2013). The BA should explain why dewatering would be needed to build bridges or place precast concrete culvert is for the project and how this would impact water quality, especially within the Kankakee River."

J. Novak stated that dewatering will only be needed for the few perennial streams located within the Corridor. Details on dewatering as well as examples for perennial streams will be added to the BA.

USFWS Comment (from December 13, 2013). Some sections that were in the original BA were omitted in the revised BA and should be reinserted as they relate to the information we requested above. For example, information about the BMP swales/basins and infiltration basins was removed (Pgs. 4-12 & 4-13 of the draft BA). We previously suggested that "specific details for the types of BMPs planned" be provided. L. Reich agreed and this information will be added back into the BA.

USFWS Comment (from December 13, 2013). Additionally the Sustainable Opportunity Areas technical memorandum should be updated to provide the requested information and should address our request for capturing the 1 inch rain event. S. Schilke stated that the hydraulic team is looking at potential consequences of 1" detention without excessive consequential impacts. He explained that the trade-off for providing 1" detention could impact high quality wetlands and/or houses.

S. Cirton stated that the recommendation for 1" (90% percentile) is based on the "Core Working Group" evaluation. A new standard to capture 1" for all projects will be set going forward and perhaps a 1.25" rain event maybe an option in areas of HQARs. Your team should be looking at 1". S. Schilke said he needs feedback from the hydraulic team; assessment of impacts to wetlands, etc. as a result of modeling to capture a 1" storm event.

L. Clemency would like the team to present a list of off-setting reasons for designing for 1" rain events where impacts may be expected, especially near the Kankakee River, which is a Class A stream.

The next part of the discussion focused on species specific comments.

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)

USFWS Comment (from December 13, 2013). The BA does not commit to implementing directional lighting near natural habitats along the project corridor, or to including our office and the Forest Service in those investigations. As previously requested, the BA should commit to implementing directional lighting near natural habitats along the project corridor, and to including our office and the Forest Service in those investigations.

S. Schilke stated that it is now a standard IDOT procedure to use directional lighting now. This commitment will be added to the BA. This has been used along Arsenal Road near the Illiana.

Indiana Bat (*Myotis sodalis*)

USFWS Comment (from December 13, 2013). As previously requested, the first sentence should be changed to acknowledge that Indiana bats have been documented approximately 10 miles south of the B3 Corridor in Sumava Resorts, IN (U.S Army Corps of Engineers -Chicago District 2005). J. Novak said this will be added to the BA. E.

McCloskey said that the mention of Missouri being the nearest location for Indiana bats is incorrect. J. Novak said this will be corrected.

USFWS Comment (from December 13, 2013). On page 4-16 of the BA, October 15 is listed as the start date for tree clearing. There are numerous instances throughout the BA with October 15 being listed as the start date for tree clearing. These instances should be changed throughout the document to a start date of October 1. F. Hurley said October 1st is okay, but the 15th in DEIS due to clearing restrictions for migratory birds.

Eryngium Stem Borer Moth (*Papaipema eryngii*)

USFWS Comment (from December 13, 2013). As noted in our December 3, 2013, letter, the rattlesnake-master borer moth is located at Prairie Sites 3 and 17 and as the BA asserts, direct impacts to the species would occur as a result of a proposed interchange option at IL 50. Since we have not yet discussed the interchange design in the area of Prairie Sites 3 and 17, nor possible alternatives to avoid and minimize impacts to these prairie remnants, the BA does not adequately disclose opportunities to avoid and minimize impacts to this species. We still strongly recommend that other interchange options be considered that would not impact the rattlesnake-master borer moth. We continue to recommend that a meeting should be held in the near future to discuss these issues with pertinent members of the NEPA 404 Merger group (i.e., pertinent state and federal natural resource agency members of the group). We recommend that this meeting be held before the BA is finalized.

J. Novak indicated that to address this comment, IDOT has advanced bridge plans for the CN/IL 50 location. A preliminary bridge plan was developed to avoid direct impact to the prairie. The bridge pier has been moved out of the prairie but there may be some temporary construction impacts and minimal shading to the prairie sites as well. This will be added to the BA. The prairie sites and acreage of impact will also be labeled on the figure within the BA. F. Hurley also stated that mitigation for the Eryngium stem borer moth will occur through the ITA process with the IDNR. S. Cirton asked if there has coordination with Steve Hamer. There has been coordination with the agency but no details on the stem borer have been developed.

Northern Long-eared Bat (*Myotis septentrionalis*)

USFWS Comment (from December 13, 2013). The December 6, 2013, cover letter recognized that "the project will likely adversely affect the sheepnose mussel, the Eryngium stem borer, and habitat for the northern long-eared bat and that formal consultation is required." There is no critical habitat designated for the northern long-eared bat, therefore an effects determination cannot be made on the bat's habitat. An effects determination needs to be made for the bat. J. Novak indicated that the habitat status will be changed.

USFWS Comment (from December 13, 2013). On page 4-16 of the BA, October 15 is listed as the start date for tree clearing. There are numerous instances throughout the

BA with October 15 being listed as the start date for tree clearing. These instances should be changed throughout the document to a start date of October 1. Previously addressed.

USFWS Comment (from December 13, 2013). The DOTs should describe how they estimated the Impacts to Forests and Fencerows for the Alternatives table (Table 4-3), which was provided in response to our request that the BA quantify forest acreage losses. The acreage amounts do not correspond to the acreage amounts found in the Illinois Natural History Survey (INHS) or Cardno JFNew references. Cardno JFNew reports 227 acres of non-wetland forest, 93 acres of fencerow, and 189 acres of wetland, some consisting of forested wetland. INHS reports 533 acres of non-wetland/upland forest, and 93.5 acres of forested wetland/shrub habitat (for a total of 626.8 acres of forested habitat). The DOTs should describe how the acreage totals in Table 4-3 were determined since the acreage figures are much lower than INHS and Cardno JFNew figures and to our knowledge, field based habitat assessments were not conducted.

J. Novak clarified the impacts reported by the footprint (as opposed to the corridor). This will be clarified in the BA.

L. Clemency indicated the most critical path of the consultation is finding out the impacts to the northern long-eared bat. E. McCloskey said that maternity colonies may be present within 2.5 mile radius of the Cedar Creek capture site in Indiana as there was a post-lactating female captured. Based on this, additional surveys to identify habitat for maternity colonies may be needed in this area. S. Cirton indicated the USFWS may come up with a different number for the distance to survey (i.e. radius). This is not yet known but the USFWS will provide.

L. Clemency asked if there are plans to characterize habitat and develop a mitigation plan to address impact. Need to make an effort to develop mitigation using a “subteam” of Shawn, Liz and Project Team (in advance of formal determination by the USFWS)

E. McCloskey stated that Cardno JF New raw data does not show two bats captured at IEN 4 (Cedar Creek). This raw data needs to be reviewed against their report and totals need to be revised if warranted. Raw data needs to be included in the Cardno JFNew Indiana Bat Mist Net Survey Report. L. Reich stated that this will be checked and revised accordingly. E. McCloskey said that if a maternity colony is present within the footprint, and impacts to this are proposed, this could be considered a jeopardy call. However, this would need to be confirmed.

J. Novak asked if the Indiana Bat Summer Survey Guidelines be sufficient to conduct the northern long-eared bat habitat assessment. S. Cirton indicated that the team can apply “summer” guidelines now and provide USFWS the habitat assessment results within the revised BA. L. Clemency indicated it is okay to conduct habitat assessments with USFWS comment on methodology/guidance.

E. McCloskey said there is a concern for taking a maternity colony. Where is the colony? USFWS needs to know. M. Allen indicated that for I-69, FHWA/INDOT did not know the location of the maternity colonies and that it was agreed that mist netting will be conducted for this project before, during, and after construction. I-69 mitigation was 3:1 for all forested areas if a maternity colony was found.

S. Cirton said using the Indiana Bat Summer Survey Guidelines would be acceptable. Future guidance would not be more restrictive. IDOT will commit habitat assessment within the footprint and within 2.5 mi. radius within areas of reproductive females and/or juveniles captured within and adjacent to the Corridor for the habitat assessment. S. Schilke asked if the DOTs could start formal consultation without the northern long-eared bat habitat assessment. S. Cirton said he needed results of habitat assessment to begin formal consultation. Prefers a single new submittal with the habitat assessment included (not a draft submittal).

L. Clemency said the USFWS would like the habitat assessment now and details on mitigation for impacts to northern long-eared bat habitat. At the very least, need the habitat assessment completed first before consultation can begin. Concerned for a "jeopardy" call by the issue with "assuming presence"

S. Schilke confirmed commitment to the habitat assessment within the footprint and additional areas within a 2.5 mile radius of locations of reproductive females and/or juveniles captured within and adjacent to the Corridor.

F. Hurley asked about summer hibernacula fidelity. Doesn't research indicate that fidelity is not as great for the northern long-eared bat as is for the Indiana bat? S. Cirton stated that information presented for this item by the Bat Team says fidelity is "similar to Indiana Bat". L. Reich mentioned that data is sparse. S. Cirton mentioned various data sources on site fidelity.

S. Cirton stated that Bloomington office/R.O. need to discuss potential jeopardy call. M. Fuller was concerned about a pause; assuming the habitat assessment is completed. S. Cirton stated that FHWA should develop a schedule for habitat assessment while FWS confers on the "jeopardy" call. M. Allen will check with FHWA – HQ.

The meeting concluded at approximately 1:40 PM.

Illiana Corridor
Phase I Study

Meeting Summary

US Fish & Wildlife Service, FHWA

Date: December 20, 2013
Time: 10:10 AM CDT
Location: Conference Call

A teleconference was held on December 20, 2013 as a follow-up to the Illiana Corridor meeting at USFWS field office in Barrington, IL on December 17, 2013 for the purpose of clarifying the habitat survey methodology to be used for determining impacts to the northern long-eared bat. The methodology to be used inside the Illiana Corridor footprint was generally discussed first. Following that discussion, the methodology to be used in two circular areas outside the Illiana Corridor footprint (centered on Forsythe Woods in IL and Cedar Creek in IN where post-lactating female or juvenile northern long-eared bats were captured and where the potential exists for a maternity colony) was discussed.

The following items were discussed:

- J. Novak and J. Sheets presented the proposed methodology for the areas in the footprint. The entire footprint from I-55 to I-65 was previously examined and potential bat habitat identified, and all identified potential bat habitat will be field surveyed and potential roost sites in wooded areas and tree lines identified using data sheets. The data sheets to be used will be forwarded to S. Cirton for his review. There was some discussion on the habitat survey protocol using ODOT standards and similarities in methodology to the Indiana bat protocols issued in 2013 by USFWS.
- V. Ruiz clarified that the only two areas outside the footprint that would be studied for potential northern long-eared bat habitat were a radius around a point in Forsythe Woods near Wilmington IL, where a juvenile bat was captured, and a radius around a point near Cedar Creek near Lake Dalecarlia IN, where a post-lactating female bat was captured.
- There was a discussion on what radius should be used for the two bat habitat studies outside the footprint (Forsythe Woods and Cedar Creek). S.Cirton mentioned the USFWS is using a 3 mile radius in their studies as the home range for a maternity colony of the northern bat, and that the topic of potential radius for habitat did not come up in a recent USFWS bi-state field office conference call on the Illiana corridor. S. Schilke offered that a 5 mile diameter (2.5 mile radius) desktop survey with limited field support is the Illiana Corridor's proposed methodology for performing the radial habitat surveys.
- S. Schilke asked if there were other items to be discussed. S. Cirton stated that mitigation will need to be considered for impacts; he is aware of IDOT's normal 1:1 tree replacement policy but also referred to the 3:1 replacement ratio that was used for the I-69 project in Indiana near the bat maternity colonies that were found. S. Schilke asked if USFWS has a similar expectation for mitigation on Illiana, and S. Cirton stated they do. S. Cirton stated that he was comfortable with the study team using a 3 mile radius (6 mile diameter) for the

habitat assessment for the two areas in IL and IN, and with using desktop review with limited field support as needed for the survey methodology.

- V. Ruiz asked if there were anything to add to the discussion of northern long-eared bat surveys. J. Sheets clarified the purpose of performing the desktop surveys of the two radial areas is to look for the most suitable habitat within the radii, and to compare its quality with that found within the Illiana Corridor footprint. S. Cirton stated he will follow up with E. McCloskey at the USFWS field office in Chesterton, IN to determine if she has any other comments on the performance of the radial bat habitat surveys.
- S. Schilke asked about any other examples of potential mitigation requirements for other species, based on the Chicago-St. Louis High speed Rail project. S. Cirton stated these have not yet been considered.

The meeting concluded at approximately 11:00 AM CDT.

Meeting follow-up: S. Cirton contacted IDOT after the teleconference and stated that, after further consideration, the radial surveys of the two sites in IL and IN should use a 5-mile radius based on current Indiana bat guidance rather than the 3-mile radius previously recommended. At IDOT's direction, the Illiana Corridor will tabulate results for both the 3-mile and the 5-mile radii at both sites.

Follow up attachments: Northern long-eared bat survey protocol (.doc file); Northern long-eared bat survey protocol, proposed blank data sheet, example data sheet (.pdf file); 2013 USFWS Indiana bat survey guidelines; shapefiles for GPS units to take PRT data points.

Remote Attendees: Shawn Cirton (USFWS)
Rick Powell (Parsons Brinckerhoff)
Ed Leonard (Parsons Brinckerhoff)
Steve Ott (Parsons Brinckerhoff)
Steve Schilke (IDOT)
Vanessa Ruiz (IDOT)
Michelle Allen (FHWA-IN)
Laura Hilden (INDOT)
Jim Novak (Huff & Huff)
L. Huff (Huff & Huff)
Jeremy Sheets (Cardno JF New)
Greg Quartucci (Cardno JF New)
Felecia Hurley (IDOT BDE)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

NOV 15 2013

REPLY TO THE ATTENTION OF E-19J

Steve Schilke, P.E.
Program Manager
Illinois Department of Transportation
201 West Center Court
Schaumburg, Illinois 60196

Jim Earl, P.E.
Project Manager
Indiana Department of Transportation
100 North Senate Avenue, #N642
Indianapolis, Indiana 46204

Re: **Draft Biological Assessment for Illiana Corridor Project, Lake County, Indiana and Will and Kankakee Counties, Illinois**

Dear Messrs. Schilke and Earl:

This letter conveys U.S. Environmental Protection Agency's (EPA) comments on a draft Biological Assessment (draft BA) dated October 2013 for the afore-mentioned Illiana Corridor project in accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA). The proposed project is a new highway connecting Interstate Highway 55 in northeastern Illinois to Interstate Highway 65 in northwestern Indiana (Will County, Illinois to Lake County, Indiana). During development of the NEPA analysis for this project, technical assistance began with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA). During technical assistance activities with USFWS, several Federally-listed threatened or endangered species potentially affected by the proposed project were identified within the survey area. Because the proposed project is a major construction activity, a BA must be prepared to analyze potential effects of the proposed project on listed and candidate species and on designated or proposed critical habitat. This information will determine whether any such species or habitat is likely to be adversely affected by the proposed action.

The following table summarizes the Federally-listed threatened or endangered species for Will County, Illinois and Lake County, Indiana.

Species (Scientific Name)	Listing Status	Effect Determination	Critical Habitat
Illinois			
Hine's emerald dragonfly (*Somatochlora hineana*)	Endangered	No effect	Identified: No effect
Eastern massasauga (*Sistrurus catenatus*)	Candidate	Not likely to adversely affect	None identified
Sheepnose mussel (*Plethobasus cyphyus*)	Endangered	Is likely to adversely affect	None identified
Snuffbox (*Epioblasma triquetra*)	Endangered	No effect	None identified

Eastern prairie fringed orchid (*Platanthera leucophaea*)	Threatened	Not likely to adversely affect	None identified
Lakeside daisy (*Hymenoxys herbacea*)	Threatened	No effect	None identified
Leafy-prairie clover (*Dalea foliosa*)	Endangered	No effect	None identified
Mead's milkweed (*Asclepias meadii*)	Threatened	No effect	None identified
Eryngium stem borer moth (*Papaipema eryngii*)	Candidate	Is likely to adversely affect	None identified
Northern long-eared bat (*Myotis septentrionalis*)	Candidate	Not likely to adversely affect	None identified
Indiana			
Indiana bat (*Myotis sodalis*)	Endangered	Not likely to adversely affect	None identified
Karner blue butterfly (*Lycaeides melissa samuelis*)	Endangered	No effect	None identified
Pitcher's thistle (*Cirsium pitcheri*)	Threatened	No effect	None identified
Mead's milkweed (*Asclepias meadii*)	Threatened	No effect	None identified
Northern long-eared bat (*Myotis septentrionalis*)	Candidate	Not likely to adversely affect	None identified

Those species for which it was determined that the proposed Illiana Corridor project will have no effect were dropped from further analysis in the BA. The BA analyzed potential effects to the following species:

Species (Scientific Name)	Listing Status	Effect Determination	Critical Habitat
Illinois			
Eastern massasauga (*Sistrurus catenatus*)	Candidate	Not likely to adversely affect	None identified
Sheepnose mussel (*Plethobasus cyphyus*)	Endangered	Is likely to adversely affect	None identified
Eastern prairie fringed orchid (*Platanthera leucophaea*)	Threatened	Not likely to adversely affect	None identified
Eryngium stem borer moth (*Papaipema eryngii*)	Candidate	Is likely to adversely affect	None identified
Northern long-eared bat (*Myotis septentrionalis*)	Candidate	Not likely to adversely affect	None identified
Indiana			
Indiana bat (*Myotis sodalis*)	Endangered	Not likely to adversely affect	None identified
Northern long-eared bat (*Myotis septentrionalis*)	Candidate	Not likely to adversely affect	None identified

Based on our review of the draft BA, EPA has developed comments and questions pertaining to the seven species listed in the preceding chart. EPA's comments and questions are designed to clarify or augment information found in the draft BA. Generally, our concerns revolve around coordination with relevant state and federal resource agencies, extent of mitigation, commitments to provide mitigation, and the nature and sufficiency of best management practices. We anticipate a revised BA will incorporate responses to our comments and questions.

Thank you for providing EPA the opportunity to comment on the draft BA. We have enclosed our detailed comments, and we are available to discuss the contents of this letter at your convenience. We look forward to receiving and commenting on a revised BA prior to release of the Tier 2 Draft Environmental Impact Statement for the Illiana Corridor project. If you have any questions concerning these comments, please contact Kathleen Kowal of my staff at (312) 353-5206.

Sincerely,

Cynthia Jozwiak Acting

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Enclosures: USEPA's Detailed Comments

cc: Shawn Cirton, USFWS, IL
Liz McCloskey, USFWS, IN
Steve Hamer, Illinois DNR, Division of Environment and Ecosystems
Robert Hommes, USFS - Midewin
Michelle Allen, FHWA – IN Division
Matt Fuller, FHWA – IL Division
Walt Zyznieuski, IDOT, BDE
Ken McMullen, InDOT

Detailed Comments, Draft Biological Assessment for the Illiana Corridor
Lake County, Indiana and Will and Kankakee Counties, Illinois
November 2013

Eastern massasauga

The draft Biological Assessment (BA) indicates surveys were conducted at four locations in Illinois and within areas of potential habitat in Indiana within the project survey area. Cardno JFNew, the biological resources contractor for Indiana, followed standard survey protocols developed by Casper et al. (2000).

Comments

1) Are the standard survey protocols developed by Casper et al. the survey protocols preferred by the U.S. Fish and Wildlife Service (USFWS)?

2) Information pertaining to surveys conducted in Illinois does not include the nature of survey protocols used and whether they are acceptable to USFWS. Likewise, the dates when surveys were conducted at the four locations in Illinois was not supplied in the draft BA. EPA recommends this information be included in the body of a revised BA.

3) The draft BA (page 4-9) includes the following statement: "The amount of impact to the appropriate habitat is unknown at this time." It is not clear from reviewing the draft BA what is the basis for this statement. Furthermore, it is not clear how this statement factors into a determination of "Not likely to adversely affect." The nature of this statement in relation to the determination should be explained in a revised BA.

4) The draft BA (page 4-9) includes the following statement:

   "Conservation measures for this species for potential indirect and cumulative impacts would include the use of wildlife friendly crossings of the highways. These crossings include the use of bridges along major riparian corridors and natural bottom culverts for other drainageways along the length of the project. These natural bottom culverts can provide safe passage for reptiles and amphibians within the project survey area in the event that populations of the snake increase in the future or habitat restoration activities at MNTP allow for the establishment of a population at MNTP."

   As part of the on-going NEPA environmental review process, a commitment to construct wildlife-friendly crossings was discussed, but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address the following points:

   i. Has a commitment to include wildlife crossings been incorporated into the final proposal for the new highway?

   ii. Has a commitment to coordinate with relevant state and federal resource agencies, including Midewin National Tallgrass Prairie (MNTP), regarding the number and

location of wildlife crossings for various species, including reptiles and amphibians, been incorporated into the final proposal for the highway?

iii. Will the number and location of wildlife crossings for various species, including reptiles and amphibians, be incorporated into a revised BA? This information is relevant to determine impact.

Sheepnose mussel

The draft BA indicates unionid mussel fauna surveys were performed within streams in Corridor B3 at locations selected by the Illinois Natural History Survey (INHS). Based on the results of habitat assessment scores and stream characterizations completed at 22 sites in March and April of 2012, the probability of a stream becoming intermittent during the 2012 field season, and/or a site's proximity to the project corridor, 11 sites were chosen for further study and 11 were eliminated. Three sites were later eliminated from surveys for freshwater mussels because the stream was either devoid of water or a more suitable location for mussels was selected. Three supplementary sites were surveyed for freshwater mussels by INHS personnel based on historical data for mussels in the streams in question.

Comments

1) Information pertaining to mussel survey sites selected by INHS and survey days does not indicate whether they are acceptable to USFWS. EPA recommends this information be included in the body of a revised BA.

2) The draft BA indicates that mussel surveys will be conducted prior to construction. To minimize direct effects to mussels, all living specimens will be removed from the construction footprint and relocated into suitable habitat, preferably upstream of the project area. Prior to relocation efforts, malacologists will work with USFWS to develop protocols in the handling, transport, and relocation of any sheepnose mussels found. However, it is not clear from reviewing the Draft BA where suitable relocation sites might be found upstream of the project site. EPA recommends this information be included in a revised BA to clearly elucidate potential extent of impact to mussels.

3) The draft BA (page 4-10) includes the following statements:

   "Other direct impacts to the mussel will include a reduction of suitable habitat within the Kankakee River. A permanent loss of habitat will result from the construction of piers within the Kankakee River. It is anticipated that up to five piers may be required to span the crossing of the river. The loss of habitat will require the creation of additional habitat for mitigation."

   As part of the on-going NEPA environmental review process, sheepnose mussel habitat mitigation was discussed but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address the following points:

i. Has an estimate been determined for the amount of sheepnose habitat that will be lost (e.g., acreage) as a result of new pier construction, etc. needed for the new highway?

ii. Has a commitment to mitigate for lost sheepnose habitat due to new pier construction, etc. within the Kankakee River been incorporated into the final proposal for the new highway?

iii. Where and how much sheepnose mussel habitat will be created or restored? Will habitat be created or restored in close proximity to other sheepnose populations or will individuals be relocated to mitigated habitat?

iv. Has a commitment to coordinate with relevant state and federal resource agencies regarding sheepnose mussel habitat mitigation been incorporated into the final proposal for the highway?

v. Will the number, location, and nature of sheepnose mussel habitat mitigation sites be incorporated into a revised BA? This information is relevant to determine impact.

4) The draft BA includes the following statements:

"Indirect impacts to the sheepnose may occur if host fish for larval sheepnose such as the sauger are driven from the area of construction. Sheepnose spawning occurs in early summer with glochidial release and host attachment in late summer. It is *anticipated* that in-stream work of crushed stone causeways placement will take place outside of the sheepnose spawning and glochidial release timeframe. Therefore, indirect impacts to host fish species of the sheepnose mussel are not anticipated." *(emphasis added)*

As part of the on-going NEPA environmental review process, a commitment to conduct in-stream work for causeway placement outside sheepnose spawning and glochidial release timeframes was discussed, but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address this issue.

5) The draft BA (page 4-14) includes the following statements:

"With the implementation of construction and post-construction stormwater quality/quantity BMPs (e.g., soil erosion and sediment controls), negative impacts to the aquatic environment are anticipated to be minimal. … Water quality would be managed through a combination of stormwater runoff and drainage collection facilities and the implementation of other post-construction BMPs. These management techniques would be in accordance with state and federal water quality goals and would be designed to maintain the chemical, physical, and biological integrity of waters of the US and restore water quality of impaired/degraded streams.

Cumulative

Addition of contaminants from point and non-point sources, siltation, and sedimentation are anticipated to impact the sheepnose mussel as a result of induced development that would occur in the survey area."

Also, the draft BA (page 4-15) includes the following statements:

"Runoff controls, such as detention, would be provided to compensate for the increased stormwater runoff from the additional impervious area constructed within the preferred corridor. Future development would also have to provide runoff controls, as required by state and local regulations. To minimize cumulative impacts, BMPs that integrate both water quantity and quality control *would be considered*, as practicable." *(emphasis added)*

Lastly, the draft BA (page 4-15) includes the following statements:

"During the development of the Tier Two DEIS, a Sustainability Opportunity Areas Technical Memorandum was developed to *outline* potential practices that will be utilized during construction and during the operation of the roadway after construction is completed (CBBEL 2012). This Technical Memorandum focuses on identifying a variety of post construction BMPs and Opportunity Areas where these BMPs could be implemented to minimize or mitigate potential impacts of the project on wetlands, creeks, and other natural resources and the built environment, specifically this addresses potential impacts to the Kankakee River." *(emphasis added)*

As part of the on-going NEPA environmental review process, a commitment to build wildlife friendly crossings was discussed, but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address the following points:

i. Will construction and post-construction stormwater quality/quantity best management practices (BMPs) be sufficient to protect sheepnose mussel habitat? Host fish habitat? EPA recommends typical BMPs be incorporated into a revised BA so USFWS can evaluate whether the BMPs will sufficiently protect sheepnose mussel and host fish habitat.

ii. Has a commitment to include water quantity and quality BMPs been incorporated into the final proposal for the new highway?

iii. Which state and federal resource agencies will review potential practices and determine appropriate practices to be used during construction and operation of the roadway after construction is complete to decrease impacts to sheepnose mussels? Has a commitment to coordinate with relevant state and federal resource agencies regarding this issue been incorporated into the final proposal for the highway?

6) The draft BA (page 4-14) includes the following statements:

"In-stream work within the Kankakee River will not occur during the spawning timeframes of state listed fish species (as listed above) and the known host fish species of the sheepnose mussel, the sauger. This in-stream work limitation may coincide with the release of glochidia from female sheepnose mussels. However, because there is limited data on when the glochidia release takes place, this cannot be stated with certainty.

Therefore, to avoid potential impacts to the state listed fish species, the sauger, and the sheepnose mussel, a date restriction will be established from February 1 to July 15, in which in-stream work within the Kankakee River will not occur."

The Draft BA indicates in-stream work will not occur from February 1 to July 15. EPA recommends the draft BA be revised to address the following points:

i. Has a commitment to the above in-stream work restriction been incorporated into the final proposal for the new highway?

ii. Does USFWS agree that the above in-stream work restriction will be sufficiently protective?

Eastern prairie fringed orchid

1) The draft BA (page 3-9) includes the following statements:

"Areas of suitable habitat that were searched in 2012 include remnant prairies (or, in some cases, only the portions of remnant habitats possessing the appropriate moisture class) along the Canadian National Railway in Peotone (Prairie Sites 1 – 12). Prairie Sites 13, 14, 15, 16, and 19 were not deemed to have suitable habitat as these sites were either too degraded or had the wrong moisture class (INHS 2013b)."

Also, the draft BA (page 3-12) includes the following statements:

"Demographic data collected for the eastern prairie fringed orchid in Illinois since 1991 indicates fluctuations in population size from year to year, with radical shifts in population size at the time of and following periods of drought (USFWS 2010a; USFWS 2012b). These findings are consistent with research conducted by Bowles, which conclude that eastern prairie fringed orchid growth is dependent upon moisture levels (Bowles 1983)."

It is not clear from reviewing the Draft BA whether the conclusions eliminating some sites deemed to have the wrong moisture class (Prairie Sites 13, 14, 15, 16, and 19) were based on historic records or conditions during 2012, which was a year of severe drought in Illinois. EPA recommends this issue be addressed in a revised BA to justify the elimination of these sites.

2) The draft BA (page 3-11) includes the following statements:

"Status Within the Project Survey Area

A population of eastern prairie fringed orchid is present at Grant Creek Prairie Nature Preserve (USFWS 2010a; Hill 2007) located adjacent to I-55 south of Blodgett, Illinois. The Grant Creek Prairie Nature Preserve is located approximately 3 miles north of Corridor B3. This eastern prairie fringed orchid occurs approximately 100 feet from MNTP property (Ulaszek and Glass 2001).

Although direct impacts to the eastern prairie fringed orchid are not expected to occur, the proposed project could impact the primary pollinator to the orchid, which is the hawkmoth (*Lepidoptera – Sphingidae*). The hawkmoth could be negatively affected by stray roadway lighting, which attracts insects and wildlife foraging for insects to roadways. Lighting, primarily at interchanges, is used for roadway safety. In places where lighting is required near MNTP and Grant Creek Prairie Nature Preserve, and other areas where the orchid may be present, IDOT and INDOT will investigate ways to minimize stray lighting from the roadway by use of directional lighting."

As part of the on-going NEPA environmental review process, a commitment to investigate and incorporate directional lighting near MNTP and Grant Creek Prairie Nature Preserve (Nature Preserve) was discussed, but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address the following points:

i. Has a commitment to include directional lighting near MNTP and the Nature Preserve been incorporated into the final proposal for the new highway?

ii. Has a commitment to coordinate with relevant state and federal resource agencies, including MNTP and Nature Preserve personnel, regarding the type and location of directional lighting been incorporated into the final proposal for the highway?

iii. Will the type and location of directional lighting be incorporated into a revised BA? This information is relevant to determine impact.

3) The draft BA (page 5-2) includes the following statements:

"5.5 Eastern Prairie Fringed Orchid

This project *is not likely to adversely affect* the eastern prairie fringed orchid as suitable habitat for this species is present within Corridor B3. The eastern prairie fringed orchid was not found within Corridor B3 during field surveys conducted for the project. The closest known eastern prairie fringed orchid population is present at Grant Creek Prairie Nature Preserve (USFWS 2010a; Hill 2007) adjacent to I-55 south of Blodgett, Illinois located approximately 3 miles north of Corridor B3. This population will not be impacted as a result of the proposed project. However, lighting associated with the proposed project could impact the primary pollinator to the orchid which is the hawkmoth. IDOT and INDOT will determine locations where directional lighting would be used to reduce potential impacts to local hawkmoths and other wildlife that predate on

hawkmoths. *Additionally, impacts to areas of potential habitat for the eastern prairie fringed could be minimized within Corridor B3.*" *(emphasis added)*

i. It is not clear from reviewing the draft BA what the last sentence is referring to. Furthermore, it is not clear how this statement factors into a determination of "Not likely to adversely affect." The nature of this statement in relation to the determination should be explained in a revised BA. If additional actions can be taken to minimize impacts to the eastern prairie fringed orchid, those actions should be discussed in a revised BA.

Eryngium stem borer moth

The draft BA indicates that surveys for the Eryngium stem borer moth (moth) were conducted in locations where significant stands of the host plant, rattlesnake master, was present. The survey locations were selected by the INHS based upon prior botanical surveys conducted for the proposed project.

Comments

1) Information pertaining to moth survey sites selected by INHS does not indicate whether these sites are acceptable to USFWS. EPA recommends this information be included in the body of the draft BA.

2) The draft BA (page 3-19) includes the following statements:

"Although only a small number of individuals of Eryngium stem borer moths were detected in the Study Area, they may represent segments of larger populations of this species previously reported to occur in nearby protected areas including the DPCA and MNTP (INHS 2013k; Panzer 1998). However, because the Eryngium stem borer moth is thought to be a poor disperser and is sensitive to fire, *the stands of rattlesnake master located within Corridor B3 likely represent important refuge areas for the moth*, given that the mentioned conservation areas are managed with frequent prescribed burning (INHS 2013k). Recent studies of prairie insects in Illinois (reviewed by Dietrich 2009) have shown that the small patches of native prairie vegetation present in highway and railroad rights-of-way are crucial to the survival of many terrestrial insect species that are dependent on prairie plants as hosts because the vast majority of their original habitat has been destroyed by agriculture and urbanization. The prairie sites in the IDOT Illiana Expressway project corridor mentioned above are no exception." *(emphasis added)*

It is not clear from reviewing the draft BA whether stands of rattlesnake master located within the project corridor will be undisturbed by construction. The nature of this statement in relation to the determination should be explained in a revised BA. If additional actions can be taken to minimize impacts to these stands of rattlesnake master, those actions should be discussed in a revised BA.

3) The draft BA (page 5-4) includes the following statements:

"Conservation measures for this species *may include* minimizing impacts to areas of habitat for Eryngium stem borer moth within Corridor B3 as well as coordination with the Illinois DNR for an ITA and mitigation measures." *(emphasis added)*

As part of the on-going NEPA environmental review process, minimizing impacts as conservation measures was discussed, but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address the following points:

i. Has a commitment to minimize impacts to serve as conservation measures for the moth been incorporated into the final proposal for the new highway?

ii. Has a commitment to coordinate with relevant state and federal resource agencies regarding these conservation measures been incorporated into the final proposal for the highway?

iii. Will the nature of these conservation measures be incorporated into a revised BA? This information is relevant to determine impact.

Indiana bat

The draft BA indicates acoustic surveys were conducted to supplement mist netting sites by detecting bats that were in areas that could not be netted in Indiana only. In a letter dated October 23, 2012, the USFWS stated that existing data indicates that the Indiana bat is not likely present in Northeastern Illinois, or if present, occurs in very low numbers (USFWS 2012c).

Comments

1) Presumably, acoustic surveys were not conducted in Illinois based on the conclusions of the above-mentioned USFWS 2012 letter. However, EPA recommends the draft BA be revised to discuss whether the use of acoustic surveys in Illinois would increase the chances of detecting any Indiana bats that may occur in very low numbers in Northeastern Illinois. EPA recommends this information be included in a revised BA.

2) The draft BA (page ES-8) includes the following statements:

"The project will remove some standing snags and other trees. To avoid direct impacts to the two bat species (Indiana bat and north long-eared bat) any tree removal activities required for the project will occur between October 15 and March 31. During this time frame, bats are most likely in their winter hibernacula and would not be utilizing forested areas for summer roosting and rearing of young. The number of potential roost trees to be removed for the project will also be minimized as much as possible as the project progresses."

Also, the draft BA (page 1-17) includes the following statements:

"Mitigation: What Kind and Who is Responsible?

Mitigation is being provided for impacts to wetlands, WOUS, and tree resources. IDOT and INDOT are responsible for accomplishing the mitigation according to the commitments made to the local communities, regulatory, and natural resource agencies. ...

- Trees: Generally, trees removed for this improvement will be replaced as close as possible to the areas from which they were removed. However, this will not be possible in all areas."

EPA recommends the draft BA be revised to include a discussion focused on whether mitigation for tree loss can be concentrated in areas near or adjacent to suitable habitat for this species within Corridor B3 (Site E located east of the Kankakee River and south of Corridor B3 as identified by INHS) in order to provide additional Indiana bat habitat. We recommend this issue be addressed by coordinating with USFWS and IDOT.

Northern long-eared bat

The draft BA indicates mist netting for bats was conducted at selected locations within Corridor 3 in Illinois by the INHS and in Indiana by Cardno JFNew. Although sampling was conducted for Indiana bats, all bats encountered during the surveys were identified.

Comments

1) Information pertaining to bat survey sites selected by INHS and Cardno JFNew does not indicate whether they are acceptable to USFWS. EPA recommends this information be included in a revised BA.

2) As part of the on-going NEPA environmental review process, mitigation that would benefit Northern long-eared bat habitat (e.g., tree mitigation) was discussed, but the draft BA does not discuss this issue in any detail. EPA recommends the draft BA be revised to address the following points:

   i. Has an estimate been determined for the amount (e.g., acreage) of overall tree loss within Corridor B3?

   ii. Has an estimate been determined for the amount (e.g., acreage) of Northern long-eared bat habitat?

   iii. EPA recommends the draft BA be revised to include a discussion focused on whether mitigation for tree loss can be concentrated in areas near or adjacent to suitable habitat for this species within Corridor B3 in order to provide additional Northern long-eared bat habitat. We recommend this issue be addressed by coordinating with USFWS, IDOT, and InDOT.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Ecological Services Field Office
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Barrington, Illinois 60010
Phone: (847) 381-2253 Fax: (847) 381-2285

IN REPLY REFER TO:
FWS/AES-CIFO/2011-CPA-0091

December 3, 2013

Steve Schilke, P.E.
Program Manager
Illinois Department of Transportation
201 West Center Court
Schaumburg, Illinois 60196

Jim Earl, P.E.
Project Manager
Indiana Department of Transportation
100 North Senate Avenue, #N642
Indianapolis, Indiana 46204

Dear Mr. Schilke and Mr. Earl:

This letter responds to the Illinois and Indiana Departments of Transportations' (DOTs) request for comments on the draft Biological Assessment (BA) dated October 2013, prepared for the Illiana Corridor project by the DOTs on behalf of the Federal Highway Administration (FHWA). At our meeting held on October 24, 2013, we agreed to review the draft BA and provide comments to ensure that the BA fulfills statutory and policy requirements under the Endangered Species Act (ESA). At the meeting, the DOTs and FHWA also agreed to fully assess impacts to three species in stages of the pre-listing process as if they were listed, so that consultation would not need to be re-initiated if these species are later listed. We have concluded our review and we provide the following comments as they relate to: 1) fully disclosing impacts to those species, 2) fully describing conservation measures for the impacted species, and 3) effects determinations for listed species.

Hine's emerald dragonfly (*Somatochlora hineana*)

We concur with your determination of "no effect" to the endangered Hine's emerald dragonfly.

Eastern massasauga (*Sistrurus catenatus*)

While we do concur with your effects determination, we find that the BA does not fully disclose all the reasonably anticipated impacts to the eastern massasauga from the proposed project. The BA asserts that direct impacts would not occur to the eastern massasauga because the known population nearest to the alignment is approximately 4.3 miles north of the project corridor. While we agree that the species is not likely to be found within the corridor and that direct impacts are not expected, the BA should not omit the reasonably anticipated indirect and

cumulative impacts that are likely to occur as a result of the project. The Illiana Corridor project would likely result in induced development north of the corridor (e.g., the Crete Intermodal Facility). Suitable habitat for the eastern massasauga is located in the area of the proposed intermodal facility and runs north along the Plum Creek drainage up to the Indiana border. This potentially suitable habitat includes areas just south of the known eastern massasauga population at Goodenow Grove, and includes areas that have never been surveyed for the species. The proposed South Suburban Airport may also induce development; although these impacts would also be assessed in a separate document for that future Federal activity/action. A discussion of these potential indirect and cumulative impacts from induced development should be included in Sections 4.2.3 and 4.2.4.

The eastern massasauga rattlesnake is not currently listed as either threatened or endangered, however the status of the species is under review by the U.S. Fish and Wildlife Service and, if warranted, the species may become listed during project construction and operation. We concur with your effects determination for the eastern massasauga rattlesnake; however please note that the full terminology for that determination is "May affect, not likely to adversely affect" the species, and the BA should use the full determination language throughout the document.

Sheepnose mussel (*Plethobasus cyphyus*)

The BA needs to include more detail on potential direct and indirect impacts to the species, and should quantify the acreage of sheepnose habitat potentially affected by project construction and future use. Acreage amounts for all potential project related activities within the Kankakee River should be fully disclosed. The BA discusses impacts from piers, causeways, and cofferdams. To fully disclose direct impacts to the sheepnose, the DOTs should also account for bridge removal and construction, including all associated impacts (e.g., falling debris from the bridge removal process). All potential stressors from the bridge construction and removal should be considered and accounted for in the impacted acreage determination.

Additionally, the BA should account for indirect impacts not only from activities in the Kankakee River but also from activities that would produce runoff in tributaries to the Kankakee River (e.g., road runoff, runoff from development, etc.). The DOTs should disclose impacted acreage amounts for sedimentation and pollutants (described in Section 4.3.3) associated with road runoff, construction, etc., which may extend further downstream than the areas of direct impacts. The BA discusses the contaminants and pollutants associated with road runoff in Section 4.3.3 and asserts that with the proposed Best Management Practices (BMPs), impacts to the aquatic environment are expected to be minimal. The DOTs should provide specific details for the types of BMPs planned and their locations, for each stressor, to support the statement that the indirect impacts from pollutants would be offset by BMPs. Plans for BMP locations and construction should be described in the BA so that the efficacy of the BMPs in offsetting pollutant impacts can be disclosed and assessed. The DOTs should emphasize in the BA that BMPs are being implemented to address potential impacts to the Kankakee River ***and*** its tributaries within the project area. In addition, Section 1.6, page 1-13, discusses stream crossings and states: "As required by permit conditions, all in-stream work will be constructed in dry conditions. … Dewatering may be required for perennial streams."

The BA should explain why dewatering would be needed to build bridges or place precast concrete culverts for the project and how this would impact water quality, especially within the Kankakee River.

Surveys for sheepnose mussels at and downstream of construction sites should be conducted prior to any construction activities. Known or possible constraints that could affect mussel surveys at the specific site of the proposed Kankakee River Bridge, such as depth of the river and velocity of flows, need to be addressed in the BA. Survey protocols provided by the Illinois Natural History Survey (INHS) are appropriate for identifying potential sheepnose locations. If the endangered mussels are found at or below the planned construction, a relocation plan, including identification of relocation locations, should be developed in consultation with our office. Relocation efforts should occur as soon as practically possible before construction.

We concur with your effects determination for the endangered sheepnose mussel; again please note that the full terminology for that determination is "May affect, likely to adversely affect" the species, and the BA should use the full determination language throughout the document.

Snuffbox mussel (*Epioblasma triquetra*)

We concur with your determination of "no effect" to the endangered snuffbox mussel.

Eastern prairie fringed orchid (*Platanthera leucophaea*)

We agree that direct impacts to the orchid are unlikely from project construction, since surveys for this species did not identify any populations within the project corridor. However, the project has the potential to affect the orchid indirectly through impacts to its pollinators (night-flying hawkmoths) from light pollution. To offset these potential impacts, the DOTs propose conservation measures which include an investigation of ways to minimize stray lighting in areas near Midewin National Tallgrass Prairie and the Des Plaines State Fish and Wildlife Area. These measures may include determining locations where directional lighting would occur. The BA should commit to implementing directional lighting near natural habitats along the project corridor, and to including our office and the Forest Service in those investigations.

We concur with your effects determination for the threatened eastern prairie fringed orchid; again please note that the full terminology for that determination is "May affect, not likely to adversely affect" the species.

Lakeside daisy (*Hymenoxys herbacea*)

We concur with your determination of "no effect" for the threatened lakeside daisy.

Leafy prairie clover (*Dalea foliosa*)

We concur with your determination of "no effect" for the endangered leafy prairie clover.

Mead's milkweed (*Asclepias meadii*)

We concur with your determination of "no effect" for the threatened Mead's milkweed.

Indiana bat (*Myotis sodalis*)

We concur with your effects determination for the endangered Indiana bat; again please note that the full terminology for that determination is "May affect, not likely to adversely affect" the species.

Karner blue butterfly (*Lycaeides melissa samuelis*)

We concur with your determination of "no effect" for the endangered Karner blue butterfly.

Pitcher's thistle (*Cirsium pitcheri*)

We concur with your determination of "no effect" for the threatened Pitcher's thistle.

Rattlesnake-master borer moth (*Papaipema eryngii*)

The rattlesnake-master borer moth is located at Prairie Sites 3 and 17 and as the BA asserts, direct impacts to the species would occur as a result of a proposed interchange option at IL 50. We presume this interchange location is part of your preferred alternative; however we are not yet at the stage of the National Environmental Policy Act (NEPA) process where we have seen the design and configuration of the preferred alternative, since we have not received the Tier II draft Environmental Impact Statement. Therefore, we have not yet discussed the interchange design in the area of Prairie Sites 3 and 17, and we have not discussed possible alternatives to avoid and minimize impacts to these prairie remnants. Because the proposed interchange option would impact the rattlesnake-master borer moth, we strongly recommend that other interchange options be considered that would not impact the species. A meeting should be held in the near future to discuss these issues. The Illinois Department of Natural Resources (IDNR) should be part of those discussions.

The rattlesnake-master borer moth is not currently listed as either threatened or endangered, however the status of the species is under review by the U.S. Fish and Wildlife Service and, if warranted, the species may become listed during project construction and operation. We believe it is premature to make an effects determination for this species until alternatives which would avoid impacts to the moth have been fully disclosed and evaluated.

Northern long-eared bat (*Myotis septentrionalis*)

The northern long-eared bat's listing status should be changed from "Candidate" to "Proposed as Endangered." The BA does not provide enough information for us to concur with your determination of "may affect, not likely to adversely affect" for this species, because the BA does not quantify forest acreage losses or other impact details. For example, the habitat losses in Indiana in the vicinity of Cedar Creek and the large forest tract near Holtz Road

(Alternatives 10A and 10B) need to be addressed. While restricting tree clearing to seasons when northern long-eared bats are not expected to be present (between October 1 and March 31) would likely minimize direct take of the species, the habitat loss could still result in adverse impacts to the northern long-eared bat. Therefore, a habitat assessment for the northern long-eared bat should be conducted using our most current Indiana Bat Summer Survey Guidelines to identify the impact acreage within the corridor, e.g., nursery habitat, roosting habitat, and foraging habitat. The DOTs should coordinate with the Chicago Illinois Field Office and the Northern Indiana Suboffice before conducting habitat assessments. The BA should also account for direct impacts to northern long-eared bats due to vehicular collisions during foraging, since the northern long-eared bats have been captured within or just outside of the B3 corridor and bats are known to be directly and indirectly impacted by roads (Zurcher 2010; Bennett et al. 2013; Bennett and Zurcher 2013). Highway lighting impacts on bat activity also needs to be addressed.

The BA should describe conservation measures for the northern long-eared bat, including avoidance and minimization of suitable habitat, which is found in wooded areas (including wooded riparian corridors), where suitable roost trees are located within the project corridor. Mitigation for tree loss should also be discussed including possible locations, acreage amounts, and types of mitigation (e.g., planting new areas with trees or acquiring new land to be transferred to a public entity).

The mist net survey report for Indiana (*Mist Net Survey for the Federally Protected Indiana Bat Myotis sodalis, June 25, 2013*) does not provide sufficient information about the bat species that were found. The report provides only percentages of males, females, adults, and juveniles netted, not actual numbers; it needs to be rewritten to provide the actual number of males and females and their reproductive status. Copies of the field survey notes need to be included with the report, it is particularly important that specific data be provided on the two individuals of this species that were found at site IEN4.

The northern long-eared bat is currently proposed as endangered, and the species may become listed during project construction and operation. Due to the insufficient disclosure of habitat-related impacts to the species and insufficient detail on conservation measures to offset those impacts, we cannot concur with your determination of "May effect, not likely to adversely effect" the northern long-eared bat.

In addition to the above species specific recommended changes, we provide the following recommended changes to the BA to ensure that all relevant information is fully disclosed.

Pg. ES-1 – The term technical assistance should be added and informal consultation should be deleted.

Pg. ES-3 – The first paragraph discussing the sheepnose should clarify that the fresh dead specimen was collected on the Kankakee River "approximately 2,600 feet upstream of Corridor B3" (as noted in the INHS survey). These references need to be consistent throughout the BA.

Pg. ES-6 – Suitable habitat for the Indiana bat should be identified as areas where suitable roost trees are located, which includes wooded riparian corridors within the corridor.

Pg. ES-7 – A sentence should be added stating that a northern long-eared bat was captured in 2012 at Forsythe Woods by the Forest Preserve District of Will County approximately one mile south of the corridor. Additionally, a sentence should be added noting that eight northern long-eared bats were captured during surveys in 2013 in southwestern Will County (at Kankakee River State Park), approximately 7 miles south of the project corridor (Environmental Solutions & Innovations, Inc. 2013). A 2003 survey at Sumava Resorts, IN, along the Kankakee River about 10 miles south of the B3 Corridor, also captured three northern long-eared bats (U.S Army Corps of Engineers – Chicago District 2005).

Pg. ES-8 – The second paragraph describing suitable habitat should not be limited to the areas listed where northern long-eared bats were captured. Suitable habitat should also include wooded areas at Forsythe Woods and any wooded riparian corridor with suitable roost trees within the corridor.

Pg. 1-12 – Section 1.6 (second paragraph) – Indiana bat impacts are mentioned as being minimized, while there is no mention of northern long-eared bats being impacted. Language should be added to state that northern long-eared bats would be impacted as well.

Pg. 1-16 – Section 1.6.3.9 – Northern long-eared bats are not mentioned as having habitat present within the corridor. Northern long-eared bats should be added to the list of species having habitat present.

Pg. 1-19 - Section 1.6.4 - The BA asserts that "BMP swales and basins will be planted with native vegetation and undergo long term maintenance and management to promote native dominated plant communities." However, the difficulties of establishing and maintaining native plant communities within areas regularly inundated with runoff needs to be acknowledged and addressed since the success of the BMPs will be affected by the plant communities that are present.

Pg. 1-19 – The 0.75" rain event should be higher. We recommend that a higher rain event be captured, at least the 1 inch rain event. The Post-Development Stormwater Runoff Standards Workgroup, of which IDOT is a member, recommends that the 1 inch rain event be used to design BMPs to offset water quality and water quantity impacts to aquatic resources. Higher rain events could be appropriate if listed species or high quality habitats are located downstream of a particular area.

Pg. 3-1 - Section 3.1.2 - The comment about the eastern massasauga in Indiana should be changed to "however, potential suitable habitat for this species is present within the B3 Corridor in Indiana."

Pg. 3-17 – At the top of the page, the statement that "the only recoveries of individual Indiana bats have been well to the south," should be deleted. Indiana bats were captured in Sumava Resorts, IN, approximately 10 miles south of the corridor during mist net surveys in 2003;

however, it is not known if the bats utilizing this summer habitat hibernate in LaSalle County, IL or in southern Indiana or some other state (U.S Army Corps of Engineers – Chicago District 2005).

Pg. 3-20 – Section 3.6.1 – The second sentence indicating that bat mist net surveys in Illinois were conducted for Indiana bats should be changed to read: "Although sampling was conducted for Indiana and northern long-eared bats, all bats encountered during the surveys were identified."

Pg. 3-21 – 3.6.3 – This section should clarify that a northern long-eared bat was captured in 2012 at Forsythe Woods by the Forest Preserve District of Will County. Additionally, this section should note that eight northern long-eared bats were captured in 2013 in southwestern Will County (at Kankakee River State Park), approximately 7 miles south of the project corridor (Environmental Solutions & Innovations, Inc. 2013). Also, a 2003 bat mist net survey at Sumava Resorts, IN, along the Kankakee River about 10 miles south of the B3 Corridor, captured three northern long-eared bats (U.S Army Corps of Engineers – Chicago District 2005).

Section 4.0 – This section should be rewritten to show that the described general cumulative effects and species specific cumulative effects follow the definition of cumulative effects under the Endangered Species Act (ESA) and not cumulative effects under NEPA. Cumulative effects under the ESA are effects resulting from future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation. This is necessary only if listed resources will be adversely affected and Formal Consultation is necessary.

Pg. 4-18 – Section 4.5.1 - The first sentence should be changed to acknowledge that Indiana bats have been documented approximately 10 miles south of the B3 Corridor in Sumava Resorts, IN (U.S Army Corps of Engineers – Chicago District 2005).

Pg. 4-20 & 4-21 – Section 4.7 – The first sentence in Section 4.7.1 needs to be changed to "The northern long-eared bat was documented within the project area." Forsythe Woods and its distance from the corridor should be added to the list of places where the bat has been captured.

Section 5.3 – It should be noted that BMPs will be implemented in proximity to tributaries of the Kankakee River to minimize impacts to the sheepnose mussel.

Section 5-13 – Forsythe Woods should be added to the list of sites that the northern long-eared bat has been captured at near the project. Wooded riparian corridors within the Illiana corridor should be added to the second paragraph discussing suitable habitat for the species (not just wooded corridors that connect Donohue Grove to Midewin National Tallgrass Prairie).

This letter provides comment under the authority of, and in accordance with, the provisions of the National Environmental Policy Act of 1969 (83 Stat. 852, as amended P.L. 91-190, 42 U.S.C. 4321 *et seq.*), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16

U.S.C. 661 *et seq.)* and the Endangered Species Act of 1973, as amended (87 Stat. 884. as amended; 16 U.S.C. 1531 *et seq.*).

Thank you for the opportunity to provide comments on the draft BA. We look for to working with you throughout the process. If you have any questions, please contact Mr. Shawn Cirton at 847/381-2253, ext. 19., or for Indiana-specific comments, Ms. Elizabeth McCloskey, at 219/983-9753.

Sincerely,

Acting

Louise Clemency
Field Supervisor

CC: USFWS, Elizabeth McCloskey
USEPA, Norm West, Kathleen Kowal, Liz Pelloso
USACE, Soren Hall
FHWA, Matt Fuller, Michelle Allen
IDNR, Steve Hamer
INDNR, Matt Buffington

U.S. Department
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Federal Highway Administration

Illinois Division

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December 6, 2013

In Reply Refer To:
HPER-IL

Ms. Louise Clemency, Supervisor
U.S. Fish & Wildlife Service, Chicago Field Office
1250 South Grove Street, Suite 103
Barrington, IL 60010

Subject: Section 7 Formal Consultation, Illiana Corridor
Will County, Illinois and Lake County, Indiana

Dear Ms. Clemency:

As required under Section 7 of the Endangered Species Act (16 USC 1536) and its implementing regulations (50 CFR 402.14(c)), the Federal Highway Administration (FHWA) hereby requests the initiation of formal consultation for the Illiana Corridor project. Enclosed is a Biological Assessment (BA) for the project, which is located in Will County, Illinois and Lake County, Indiana.

The FHWA, in cooperation with the Illinois Department of Transportation (IDOT) and the Indiana Department of Transportation (INDOT), is completing a tiered Environmental Impact Statement (EIS) for the Illiana Corridor project. Tier One was completed in January 2013 with a combined Final Environmental Impact Statement (FEIS) and Record of Decision, and Tier Two was initiated in February 2013.

Throughout this year, we have coordinated with your office on key project milestones, including reaching concurrence on the Purpose and Need and the Alternatives to be Carried Forward in the Draft EIS. We also coordinated a field visit to view environmental resources in the project area. On October 24, 2013, IDOT shared a copy of a Draft BA with your office to solicit feedback, and the enclosed BA has been updated to address your December 3, 2013 comments. As part of the informal consultation, the parties recognized that the project will likely adversely affect the sheepnose mussel (Endangered - *Plethobasus cyphyus*), the Eryngium stem borer (Candidate - *Papaipema eryngii*), and habitat for the northern long-eared bat (Proposed as Endangeredfor listing – *Myotis septentrionalis*), and that formal consultation is required.

At this time, FHWA requests your agency's concurrence with the findings of the BA in accordance with 50 CFR 402.12(j). We also request that formal consultation be initiated in accordance with 50 CFR 402.14 and that the U.S. Fish & Wildlife Service (USFWS) prepare a Biological Opinion for the project. In accordance with 50 CFR 402.12(j), we are initiating formal consultation with the submission of this BA. A copy of the BA will be included in the Draft EIS, which will allow the public and other agencies to review the analysis during the Draft EIS

comment period. Prior to issuing a Record of Decision, FHWA and USFWS must conclude Section 7 consultation through the issuance of a Biological Opinion by USFWS, and will include a copy of the Biological Opinion in the FEIS.

The delivery of this project is on an aggressive schedule, and the goal is to complete the National Environmental Policy Act process in April 2014. We look forward to working with your office during the formal consultation process and will be available to meet with you when needed during your review of the BA and the development of the Biological Opinion.

If you have any questions or require additional information at this time, please contact me at (217) 492-4625, or matt.fuller@dot.gov.

Sincerely,

Matt Fuller
Environmental Programs Engineer

Enclosure

ecc:
Ms. Elizabeth McCloskey, USFWS-Indiana
Mr. John Fortmann, Regional Engineer D1, IDOT
Mr. John Baranzelli, Bureau of Design and Environment, IDOT
Mr. Thomas Brooks, Bureau of Design and Environment, IDOT
Mr. Steven Schilke, Engineer, District 1, IDOT
Mr. Jim Earl, Engineer, INDOT

United States Department of the Interior

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IN REPLY REFER TO:
FWS/AES-CIFO/2011-CPA-0091

December 13, 2013

Matt Fuller
Environmental Programs Engineer
Federal Highway Administration
3250 Executive Park Dr.
Springfield, IL 62703

Dear Mr. Fuller:

This letter responds to the Federal Highway Administration's (FHWA) December 6, 2013, letter transmitting a revised Biological Assessment (BA) and requesting initiation of formal consultation for the Illiana Corridor project. We had previously provided comments on an earlier draft BA dated October 2013, to ensure that the BA: 1) fully disclosed impacts to species listed in the BA, 2) fully described conservation measures for the impacted species, and 3) provided appropriate effects determinations for species listed in the BA. We have conducted a preliminary review of the revised BA. Although a table submitted with the revised BA demonstrates a disposition of comments indicating that the majority of the changes we requested were made, our review finds that the vast majority of recommendations that we provided were not in fact addressed or incorporated into the document. We provide the following comments to ensure that the BA fully addresses our comments and provides all of the information required by the regulations, so that formal consultation can be initiated. We recommend that a draft copy of the newly revised BA, which highlights all of the suggested changes, be provided for review prior to FHWA's submittal of the final BA. We look forward to discussing the matter further during our meeting scheduled for December 17, 2013.

Eastern massasauga (*Sistrurus catenatus*)

Our request for a discussion of the indirect and cumulative impacts from development on the species was not incorporated into the BA. The revised BA asserts that the planned intermodal facility would be approximately 1000 acres in size. We provided information that suitable habitat for the eastern massasauga is within the vicinity of the proposed facility and within the Plum Creek drainage. The BA asserts that since the last known population of the eastern massasauga was within a forest preserve that cumulative impacts are unlikely; although we provided information asserting that massasauga habitat is within the vicinity of the intermodal

facility and that habitat has never been surveyed. Based on the information we disagree with the DOTs assessment that there would be no cumulative impacts to the massasauga.

Sheepnose mussel (*Plethobasus cyphyus*)

The BA should explain why the area of impact for the crossing of the Kankakee River (approximately 4 acres) found in the previous draft was eliminated. The revised version currently shows that the area of temporary impact related to the causeway is approximately 2 acres of river bottom.

Although the BA does provide a figure (Fig. 2) showing an expanded mussel action area, which we assume to include the impact acreage amounts for direct and indirect impacts, there is no acreage amount on the figure or reference for the acreage amount in Section 4.3. The second paragraph of Section 4.3.1 discusses siltation and sedimentation impacts for several hundred feet downstream of the bridge work. The BA should fully describe the total impact acreage for the mussel action area and how the DOTs calculated these amounts.

The Driscoll model should be added to the appendices since it was used to help demonstrate that there would be no water quality impacts from road runoff. Preliminary review by our staff revealed concerns that we have in using the Driscoll model, as it relates to fully disclosing water quality impacts to the sheepnose mussel. We propose to discuss our concerns regarding the model with you at our December 17, 2013, meeting.

As noted in our December 3, 2013, letter, "The DOTs should provide specific details for the types of BMPs planned and their locations, for each stressor, to support the statement that the indirect impacts from pollutants would be offset by BMPs. Plans for BMP locations and construction should be described in the BA so that the efficacy of the BMPs in offsetting pollutant impacts can be disclosed and assessed. The DOTs should emphasize in the BA that BMPs are being implemented to address potential impacts to the Kankakee River and its tributaries within the project area... The BA should explain why dewatering would be needed to build bridges or place precast concrete culverts for the project and how this would impact water quality, especially within the Kankakee River."

Some sections that were in the original BA were omitted in the revised BA and should be re-inserted as they relate to the information we requested above. For example, information about the BMP swales/basins and infiltration basins was removed (Pgs. 4-12 & 4-13 of the draft BA). We previously suggested that "specific details for the types of BMPs planned" be provided.

Reference is made to the pollutants and how federal, state, and local regulations would protect streams from water quality and water quantity impacts. Again, the BA should provide specifics as to how the proposed BMPs would protect streams from water quality and water quantity impacts.

Reference is made to the Sustainable Opportunity Areas technical memorandum and the BA mentions the variety of BMPs and Opportunity Areas where BMPs could be implemented. Please see our comments above about our previously requested details for BMP types,

locations, etc. Additionally the Sustainable Opportunity Areas technical memorandum should be updated to provide the requested information and should address our request for capturing the 1 inch rain event.

Eastern prairie fringed orchid (*Platanthera leucophaea*)

The BA does not commit to implementing directional lighting near natural habitats along the project corridor, or to including our office and the Forest Service in those investigations. As previously requested, the BA should commit to implementing directional lighting near natural habitats along the project corridor, and to including our office and the Forest Service in those investigations.

Indiana bat (*Myotis sodalis*)

As previously requested, the first sentence should be changed to acknowledge that Indiana bats have been documented approximately 10 miles south of the B3 Corridor in Sumava Resorts, IN (U.S Army Corps of Engineers – Chicago District 2005).

On page 4-16 of the BA, October 15 is listed as the start date for tree clearing. There are numerous instances throughout the BA with October 15 being listed as the start date for tree clearing. These instances should be changed throughout the document to a start date of October 1.

Rattlesnake-master borer moth (*Papaipema eryngii*)

As noted in our December 3, 2013, letter, the rattlesnake-master borer moth is located at Prairie Sites 3 and 17 and as the BA asserts, direct impacts to the species would occur as a result of a proposed interchange option at IL 50. Since we have not yet discussed the interchange design in the area of Prairie Sites 3 and 17, nor possible alternatives to avoid and minimize impacts to these prairie remnants, the BA does not adequately disclose opportunities to avoid and minimize impacts to this species. We still strongly recommend that other interchange options be considered that would not impact the rattlesnake-master borer moth. We continue to recommend that a meeting should be held in the near future to discuss these issues with pertinent members of the NEPA/404 Merger group (i.e., pertinent state and federal natural resource agency members of the group). We recommend that this meeting be held before the BA is finalized.

Northern long-eared bat (*Myotis septentrionalis*)

The December 6, 2013, cover letter recognized that "the project will likely adversely affect the sheepnose mussel, the Eryngium stem borer, and habitat for the northern long-eared bat, and that formal consultation is required." There is no critical habitat designated for the northern long-eared bat, therefore an effects determination cannot be made on the bat's habitat. An effects determination needs to be made for the bat.

On pages 4-19 and 4-20 of the BA, October 15 is listed as the start date for tree clearing. This date is more restrictive than required, and should be changed to October 1 throughout the document.

The DOTs should describe how they estimated the Impacts to Forests and Fencerows for the Alternatives table (Table 4-3), which was provided in response to our request that the BA quantify forest acreage losses. The acreage amounts do not correspond to the acreage amounts found in the Illinois Natural History Survey (INHS) or Cardno JFNew references. Cardno JFNew reports 227 acres of non-wetland forest, 93 acres of fencerow, and 189 acres of wetland, some consisting of forested wetland. INHS reports 533 acres of non-wetland/upland forest, and 93.5 acres of forested wetland/shrub habitat (for a total of 626.8 acres of forested habitat). The DOTs should describe how the acreage totals in Table 4-3 were determined since the acreage figures are much lower than INHS and Cardno JFNew figures and to our knowledge, field based habitat assessments were not conducted.

Our December 3, 2013, letter indicated that direct (collisions) and indirect (behavioral avoidance and lighting impacts) impacts to the northern long-eared bat from the future tollway operation need to be disclosed and evaluated in the BA. The BA does not yet address these impacts.

Conservation measures details that we requested in our December 3, 2013, letter were not incorporated into the revised BA. Those additional details need to be provided as previously requested.

In addition to the above species specific recommended changes, the majority of the recommended changes we provided on pages 5 through 7 of our December 3, 2013, letter were not incorporated into the revised BA. We again recommend that those changes be incorporated into the BA to ensure that all relevant information is fully disclosed. Due to some changes in the format of the revised BA, some recommended changes provided in our December 3, 2013, letter may not be found on the previously identified pages. FHWA should ensure that these changes are made in the appropriate sections of the revised BA.

Finally, the effects determinations in the revised BA do not follow the full terminology we provided in our December 3, 2013, letter (e.g., the determination is "may effect, not likely to adversely effect" rather than merely "not likely to adversely effect"). These changes should be made throughout the revised BA.

This letter provides comment under the authority of, and in accordance with, the provisions of the National Environmental Policy Act of 1969 (83 Stat. 852, as amended P.L. 91-190, 42 U.S.C. 4321 *et seq.*), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.)* and the Endangered Species Act of 1973, as amended (87 Stat. 884. as amended; 16 U.S.C. 1531 *et seq.*).

If you have any questions, please contact Mr. Shawn Cirton at 847/381-2253, ext. 19., or for Indiana-specific comments, Ms. Elizabeth McCloskey, at 219/983-9753.

Sincerely,

Louise Clemency
Field Supervisor

CC: USFWS, Elizabeth McCloskey
USEPA, Norm West, Kathleen Kowal, Liz Pelloso
USACE, Soren Hall, Paul Leffler
FHWA, Michelle Allen
IDOT, Steve Schilke
INDOT, Jim Earl
IDNR, Steve Hamer
INDNR, Matt Buffington

ILLIANA CORRIDOR
PARTNERING FOR PROGRESS

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Schaumburg, Illinois 60196

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Indianapolis, Indiana 46204

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January 9, 2014

Ms. Louise Clemency
Acting Field Supervisor
US Department of the Interior
Fish and Wildlife Service
Chicago Ecological Services Field Office
1250 South Grove Avenue, Suite 103
Barrington, IL 60010

Dear Ms. Clemency:

Reference is made to your letter of December 13, 2013 and subsequent coordination meetings with USFWS staff on December 17 and 20, 2013 regarding the draft Biological Assessment (BA) for the Illiana Corridor which was previously transmitted to your office on December 6, 2013.

Based upon the comments received to the draft BA on December 13, 2013, we offer the following, which will be incorporated into the final BA presented to the USFWS.

Eastern Massasauga (*Sistrurus catenatus*)

Comment 1: Request for discussion of indirect and cumulative impacts were not incorporated into the BA. The revised BA asserts that the planned intermodal facility would be approximately 1000 acres in size. We provided information that suitable habitat for the eastern massasauga is within the vicinity of the proposed facility and within the Plum Creek drainage. The BA asserts that since the last known population of the eastern massasauga was within a forest preserve that cumulative impacts are unlikely; although we provided information asserting that massasauga habitat is within the vicinity of the intermodal facility and that habitat has never been surveyed. Based on this information we disagree with the DOTs assessment that there would be no cumulative impacts to the massasauga.

Response: Cumulative and indirect impacts will be addressed within Section 4.2.1 of the BA.

Sheepnose Mussel (*Plethobasus cyphyus*)

Comment 2: The BA should explain why the area of impact for the crossing of the Kankakee River (approximately 4 acres) found in the previous draft was eliminated. The revised version currently shows that the area of temporary impact related to the causeway is approximately 2 acres of river bottom.

Response: The impact acreage for the crossing of the Kankakee River will be thoroughly explained within the revised BA. Impacts were calculated for the placement

of piers and cofferdams within the River. The total impact acreage for piers and cofferdams equals 12,100 square feet (0.278 acre). The area needed to construct causeways is approximately 2 acres. Additional area of impact due to siltation and sedimentation will be included within the revised BA as well. Figure 2 will be revised to show detail of acreage of impact for the piers, cofferdams, and downstream siltation/sedimentation.

Comment 3: Although the BA does provide a figure (Fig. 2) showing an expanded mussel action area, which we assume to include the impact acreage amounts for direct and indirect impacts, there is no acreage amount on the figure or reference for the acreage amount in Section 4.3.

Response: Figure 2 will be revised to show detail of acreage of impact for the piers, cofferdams, and downstream siltation/sedimentation. The revisions will include direct and indirect impact acreages and this will be referenced in Section 4.3.

Comment 4: The second paragraph of Section 4.3.1 discusses siltation and sedimentation impacts for several hundred feet downstream of the bridge work. The BA should fully describe the total impact acreage for the mussel action area and how the DOTs calculated these amounts.

Response: Additional area of impact due to siltation and sedimentation will be included within Section 4.3.1 of the revised BA. A description on how the impact acreages were determined will be added to the BA as well. Figure 2 will be revised to show detail of acreage of impact for the piers, cofferdams, and downstream siltation/sedimentation.

Comment 5: The Driscoll model should be added to the appendices since it was used to help demonstrate that there would be no water quality impacts from road runoff. Preliminary review by our staff revealed concerns that we have in using the Driscoll model, as it relates to fully disclosing water quality impacts to the sheepnose mussel. We propose to discuss our concerns regarding the model with you at our December 17, 2013, meeting.

Response: The Driscoll model will be added to the appendices of the revised BA to help demonstrate water quality impacts will not occur due to roadway runoff. Additional comments provided to the project team at the December 17, 2013 meeting regarding concerns with using the Driscoll model, will also be addressed within the revised BA. These comments relate to fully disclosing water quality impacts to the sheepnose mussel.

Comment 6: As noted in our December 3, 2013 letter, "The DOTs should provide specific details for the types of BMPs planned and their locations, for each stressor, to support the statement that the indirect impacts from pollutants would be offset by BMPs. Plans for BMP locations and construction should be described in the BA so that the efficacy of the BMPs in offsetting pollutant impacts can be disclosed and assessed. The

DOTs should emphasize in the BA that BMPs are being implemented to address potential impacts to the Kankakee River and its tributaries within the project area.

Response: The draft BA provided general BMP types; however, specific locations of BMPs will be provided in the revised BA by adding the figures associated with Sustainability Opportunities Areas Memo to Appendix F. This mapping appendix will identify areas of BMPs that were utilized for the water quality assessment. BMPs to address specific stressors are generally discussed, but this discussion will be elaborated to a greater extent within Sections 1.2.3 and 4.3.2.

Comment 7: The BA should explain why dewatering would be needed to build bridges or place precast concrete culverts for the project and how this would impact water quality, especially within the Kankakee River.

Response: The revised BA will explain why dewatering would be needed to build bridges or place precast concrete culverts for the proposed project and how this will impact water quality, with special attention to the Kankakee River within Sections 1.2.1.4 and 4.3.2.1.

Comment 8: Some sections that were in the original BA were omitted in the revised BA and should be reinserted as they relate to the information we requested above. For example, information about the BMP swales/basins and infiltration basins was removed (Pgs. 4-12 & 4-13 of the draft BA). We previously suggested that "specific details for the types of BMPs planned" be provided.

Response: Some of the above referenced information has been deleted since the first draft of the BA was delivered to the USFWS. However, some of this information has been retained. Information regarding BMP swales/basins is still within the document (See Section 1.2.3, paragraph 6 and 10: Section 4.3.2, paragraph 3). Specific details on locations of BMPs will be incorporated into the revised BA within the above mentioned sections.

Comment 9: Reference is made to the pollutants and how federal, state, and local regulations would protect streams from water quality and water quantity impacts. Again, the BA should provide specifics as to how the proposed BMPs would protect streams from water quality and water quantity impacts. Reference is made to the Sustainable Opportunity Areas technical memorandum and the BA mentions the variety of BMPs and Opportunity Areas where BMPs could be implemented. Please see our comments above about our previously requested details for BMP types, locations, etc. Additionally the Sustainable Opportunity Areas technical memorandum should be updated to provide the requested information and should address our request for capturing the 1 inch rain event.

Response: The draft BA provided general BMP types; however, specific locations of BMPs will be provided in the revised BA by adding the figures associated with Sustainability Opportunities Areas Memo to Appendix F. This mapping appendix will

identify areas of BMPs that were utilized for the water quality assessment. BMPs to address specific stressors are generally discussed, but this discussion will be elaborated to a greater extent within Sections 1.2.3 and 4.3.2.

IDOT and INDOT are reviewing the use of the 1.0 inch event and will incorporate this into the plans where feasible and in areas that will not cause additional impacts to other sensitive resources.

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)

Comment 10: The BA does not commit to implementing directional lighting near natural habitats along the project corridor, or to including our office and the Forest Service in those investigations. As previously requested, the BA should commit to implementing directional lighting near natural habitats along the project corridor, and to including our office and the Forest Service in those investigations.

Response: A commitment to utilize directional lighting near natural habitats (near Midewin National Tallgrass Prairie, Grant Creek Prairie Nature Preserve, and other areas where the eastern prairie fringed orchid may be present) along the project corridor will be made in the revised BA within Section 4.4.1.

Indiana Bat (*Myotis sodalis*)

Comment 11: As previously requested, the first sentence should be changed to acknowledge that Indiana bats have been documented approximately 10 miles south of the B3 Corridor in Sumava Resorts, IN (U.S Army Corps of Engineers -Chicago District 2005).

Response: Yes. The requested revisions will be added throughout the revised BA (Executive Summary, Section 3.4.3, Section 3.6.3, Section 4.5.1, Section 4.7.1, Section 5.13.)

Comment 12: On pages 4-16 of the BA, October 15 is listed as the start date for tree clearing. There are numerous instances throughout the BA with October 15 being listed as the start date for tree clearing. These instances should be changed throughout the document to a start date of October 1.

Response: Because the start date for tree clearing is listed as October 15th under the Migratory Bird Treaty Act, the DOTs plan to use October 15th (the more restrictive date) for all tree clearing associated with the proposed project. This will be clarified within the Executive Summary and Sections 1.2.2.1, 4.5.2, 4.7.1, 4.7.3, 5.9, and 5.13.

Rattlesnake-Master Borer Moth (*Papaipema eryngii*)

Comment 13: As noted in our December 3, 2013, letter, the rattlesnake-master borer moth is located at Prairie Sites 3 and 17 and as the BA asserts, direct impacts to the species would occur as a result of a proposed interchange option at IL 50. Since we have not yet discussed the interchange design in the area of Prairie Sites 3 and 17, nor possible alternatives to avoid and minimize impacts to these prairie remnants, the BA does not adequately disclose opportunities to avoid and minimize impacts to this species. We still strongly recommend that other interchange options be considered that would not impact the rattlesnake-master borer moth. We continue to recommend that a meeting should be held in the near future to discuss these issues with pertinent members of the NEPA/404 Merger group (i.e., pertinent state and federal natural resource agency members of the group). We recommend that this meeting be held before the BA is finalized.

Response: A discussion will be added to the revised BA within Section 4.6.1 to indicate that piers will not be placed within the high quality prairie in which the rattlesnake-master borer moth resides. Language will also be added to explain that impacts to habitat for this species will occur regardless of where the Corridor crosses IL 50/Canadian National Railroad, due to the location of high quality prairie along the entire right-of-way of IL 50/Canadian National Railroad within the project vicinity.

Northern Long-Eared Bat (*Myotis septentrionalis*)

Comment 14: The December 6, 2013 cover letter recognized that "the project will likely adversely affect the sheepnose mussel, the Eryngium stem borer, and habitat for the northern long-eared bat and that formal consultation is required." There is no critical habitat designated for the northern long-eared bat, therefore an effects determination cannot be made on the bat's habitat. An effects determination needs to be made for the bat.

Response: The DOTs are currently conducting field habitat assessments for the northern long-eared bat within the proposed footprint of the project as well as conducting a desktop assessment of habitat within a five mile radius of the two northern long-eared bat capture sites (Forsythe Woods Forest Preserve and Cedar Creek/IEN Site 4) near the Illiana footprint. This data will be incorporated into Section 3.6.3 of the revised BA in order to make an effect determination for the northern long-eared bat as well as to determine potential minimization and mitigation for potential impacts to habitat for this species.

Comment 15: On pages 4-19 and 4-20 of the BA, October 15 is listed as the start date for tree clearing. This date is more restrictive than required, and should be changed to October 1 throughout the document.

Response: Because the start date for tree clearing is listed as October 15th under the Migratory Bird Treaty Act, the DOTs plan to use October 15th (the more restrictive date) for all tree clearing associated with the proposed project. This will be clarified within the Executive Summary and Sections 1.2.2.1, 4.5.2, 4.7.1, 4.7.3, 5.9, and 5.13.

Comment 16: The DOTs should describe how they estimated the Impacts to Forests and Fencerows for the Alternatives table (Table 4-3), which was provided in response to our request that the BA quantify forest acreage losses. The acreage amounts do not correspond to the acreage amounts found in the Illinois Natural History Survey (INHS) or Cardno JFNew references. Cardno JFNew reports 227 acres of non-wetland forest, 93 acres of fencerow, and 189 acres of wetland, some consisting of forested wetland. INHS reports 533 acres of non-wetland/upland forest, and 93.5 acres of forested wetland/shrub habitat (for a total of 626.8 acres of forested habitat). The DOTs should describe how the acreage totals in Table 4-3 were determined since the acreage figures are much lower than INHS and Cardno JFNew figures and to our knowledge, field based habitat assessments were not conducted.

Response: A description of how impacts to Forests and Fencerows were calculated will be provided in Sections 4.5.1 and 4.7.1 within the revised BA.

Comment 17: Our December 3, 2013 letter indicated that direct (collisions) and indirect (behavioral avoidance and lighting impacts) impacts to the northern long-eared bat from the future tollway operation need to be disclosed and evaluated in the BA. The BA does not yet address these impacts.

Response: A direct and indirect impacts discussion will be added to Section 4.7.1 of the revised BA regarding roadway operations in relation to the northern long-eared bat.

Comment 18: Conservation measures details that we requested in our December 3, 2013, letter were not incorporated into the revised BA. Those additional details need to be provided as previously requested.

Response: Conservation measure details were not included in the BA as the assessment of impacts to northern long-eared bat habitat has not yet been conducted. The DOTs are currently conducting field habitat assessments for the northern long-eared bat within the proposed footprint of the project as well as conducting a desktop assessment of habitat within a five mile radius of the two northern long-eared bat capture sites (Forsythe Woods Forest Preserve and Cedar Creek/IEN Site 4) near the Illiana footprint. This data will be incorporated into Section 3.6.3 of the revised BA in order to make an effect determination for the northern long-eared bat as well as to determine potential minimization and mitigation for potential impacts to habitat for this species.

General Comments

Comment 19: In addition to the above species specific recommended changes, the majority of the recommended changes we provided on pages 5 through 7 of our December 3, 2013, letter were not incorporated into the revised BA. We again recommend that those changes be incorporated into the BA to ensure that all relevant information is fully disclosed. Due to some changes in the format of the revised BA, some recommended changes provided in our December 3, 2013, letter may not be found on the previously identified pages. FHWA should ensure that these changes are made in the appropriate sections of the revised BA.

Response: All of the comments from the December 3, 2013 comment response letter from the USFWS will be addressed within the revised BA. For specific responses to the comments referenced, please see the attached Disposition of Comments table, comments 29-46.

Comment 20: Finally, the effects determinations in the revised BA do not follow the full terminology we provided in our December 3, 2013, letter (e.g., the determination is "may effect, not likely to adversely effect" rather than merely "not likely to adversely effect"). These changes should be made throughout the revised BA.

Response: The effects determinations will be revised throughout the BA.

Field work related to the assessment of potential habitat for the northern long-eared bat was initiated in December, 2013. Weather dependent, field work is expected to be completed before the end of January, 2014. If no further weather delays occur, we anticipate resubmittal of the BA by the week of February 17, 2014.

Thank you for your comments and we look forward to continued collaboration with you and the USFWS staff.

Sincerely,

Steve Schilke

Steve Schilke, P.E.
Program Manager
Illinois Department of Transportation

James Allen Earl II

Jim Earl, P.E.
Project Manager
Indiana Department of Transportation

cc: Elizabeth McCloskey - USFWS Chesterton, IN
Norm West – USEPA
Kathleen Kowal – USEPA
Liz Pelloso – USEPA
Soren Hall – USACE
Paul Leffler – USACE
Steve Schilke – IDOT
Jim Earl – INDOT
Matt Fuller – FHWA IL Division
Michelle Allen – FHWA IN Division
IDNR – Steve Hamer
INDNR – Matt Buffington

Biological Assessment for Section 7 Consultation

Will County, Illinois

Lake County, Indiana

Prepared For:

Illinois Department of Transportation

Indiana Department of Transportation

US Department of Transportation, Federal Highway Administration

November 2013

N-056

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Contact Person: Steve Schilke Phone Number: (847) 705-4125

Executive Summary

The Illiana Corridor is proposed as a new fully access controlled highway connecting Interstate Highway 55 (I-55) in northeastern Illinois to Interstate Highway 65 (I-65) in northwestern Indiana, which would be operated as a toll facility. The *Illiana Expressway Economic Opportunities Analysis* concluded that a new transportation facility between I-55 in Illinois and I-65 in Indiana could provide a new east-west connection as an alternative to the congested I-80 and produce substantial northeast Illinois and northwest Indiana regional economic benefits over a 30 year period. The lead agencies are the Illinois Department of Transportation (IDOT), the Indiana Department of Transportation (INDOT), and the Federal Highway Administration (FHWA).

The Illiana Corridor was developed through extensive analysis within the project Study Area. The general location of the Study Area is between I-55 in Illinois on the west, I-65 in Indiana on the east, the areas south of US 30 to the northern portion of Kankakee County in Illinois and the southern portion of Lake County in Indiana (see Figure 1 located in Appendix A). The evaluation of travel performance, and socioeconomic and environmental impacts were key considerations in the overall alternative corridors development and evaluation process. Based on the consideration of the entire evaluation process, Corridors A3S2, B3, and B4 were carried forward for detailed analysis in the Tier One National Environmental Policy Act (NEPA) Environmental Impact Statement (Tier One) along with the No-Action Alternative. The Tier One combined Final Environmental Impact Statement (FEIS)/Record of Decision (ROD) identified Corridor B3 as the preferred corridor (the Corridor).

Through the development of the Illiana Corridor consultation with the US Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act (ESA) [16 U.S.C. 1531 et seq.] occurred. Through informal consultation with the USFWS, threatened and endangered species potentially affected by the proposed action were identified within the survey area. As the proposed project is a major construction activity (50 CFR §402.02) a Biological Assessment (BA) must be prepared. The purpose of this BA is to evaluate the potential effects of the action on listed and proposed species and designated and proposed critical habitat and determine whether any such species or habitat are likely to be adversely affected by the action.

The Illinois Natural History Survey (INHS) conducted herpetofaunal, avian, botanical, mussel, fish, eastern prairie fringed orchid, and Indiana bat surveys in the Illinois portion of the survey area in 2010, 2012, and 2013. Cardno JFNew conducted herpetofaunal, avian, botanical, mussel, fish, eastern prairie fringed orchid, and Indiana bat surveys in the Indiana portion of the survey area in 2012 and 2013.

Based on the review of information provided by the USFWS on May 13, 2013, as well as conditions observed in the field during the various floral and faunal surveys, effect determinations were prepared.

Table ES-1 summarizes the federally threatened and endangered species within Will County, Illinois and Lake County, Indiana and the effect determination from the construction and operation of the Illiana Corridor.

Table ES-1. Effect Determination of Species and Critical Habitat

Species (Scientific Name)	Listing Status	Effect Determination	Critical Habitat
Illinois			
Hine's emerald dragonfly (*Somatochlora hineana*)	Endangered	No effect	Identified: No effect
Eastern massasauga (*Sistrurus catenatus*)	Candidate	Not likely to adversely affect	None identified
Sheepnose mussel (*Plethobasus cyphyus*)	Endangered	Is likely to adversely affect	None identified
Snuffbox (*Epioblasma triquetra*)	Endangered	No effect	None identified
Eastern prairie fringed orchid (*Platanthera leucophaea*)	Threatened	Not likely to adversely affect	None identified
Lakeside daisy (*Hymenoxys herbacea*)	Threatened	No effect	None identified
Leafy-prairie clover (*Dalea foliosa*)	Endangered	No effect	None identified
Mead's milkweed (*Asclepias meadii*)	Threatened	No effect	None identified
Eryngium stem borer moth (*Papaipema eryngii*)	Candidate	Is likely to adversely affect	None identified
Northern long-eared bat (*Myotis septentrionalis)*	Proposed for Listing	Not likely to adversely affect	None identified
Indiana			
Indiana bat (*Myotis sodalis*)	Endangered	Not likely to adversely affect	None identified
Karner blue butterfly (*Lycaeides melissa samuelis*)	Endangered	No effect	None identified
Pitcher's thistle (*Cirsium pitcheri*)	Threatened	No effect	None identified
Mead's milkweed (*Asclepias meadii*)	Threatened	No effect	None identified
Northern long-eared bat (*Myotis septentrionalis)*	Proposed for Listing	Not likely to adversely affect	None identified

Hine's Emerald Dragonfly

This project will *not affect* the Hine's emerald dragonfly (*Somatochlora hineana*) as its suitable habitat is not found within the Corridor. Hine's emerald dragonfly habitat includes shallow soils over dolomite bedrock where cool groundwater feeds shallow emergent wetlands. Breeding occurs in small and shallow channels or rivulets through marshes, typically with slow flow and organic detritus on channel bottoms, and in small pools or soft organic substrate fed by sheet flow through sedge meadows and fens. Adults forage in proximity to breeding sites, utilizing a variety of open habitats including marsh, sedge meadow, fen, and successional field. Seven critical habitat units have been identified in Illinois (Federal Register 2010). The closest critical habitat unit is located approximately 16 miles north of the Corridor. Therefore, critical habitat will not be destroyed or adversely modified by the Illiana Corridor.

Eastern Massasauga

This project is *not likely to adversely affect* the eastern massasauga rattlesnake (*Sistrurus catenatus*). Although suitable habitat for this species is present within the Corridor, herpetofaunal surveys conducted within suitable habitat in the project survey area did not indicate the presence of the eastern massasauga. One eastern massasauga population is located approximately 4.3 miles from the Corridor within the Goodenow Grove Nature Preserve. This population will not be impacted as a result of construction activities. Wildlife crossings are being considered and proposed for the Corridor which would allow for movement and provide safe passage for reptiles and amphibians. Critical habitat has not been designated for the eastern massasauga.

Sheepnose Mussel

This project *is likely to adversely affect* the sheepnose mussel (*Plethobasus cyphyus*). Suitable habitat for the sheepnose mussel is present within the Corridor. There are 22 records of sheepnose from the INHS mussel database in the Illinois portion of the Kankakee River that span from 1960 to 2010. A fresh dead specimen of the sheepnose was collected approximately 1,200 feet downstream of its confluence with Forked Creek during field surveys by INHS biologists (INHS 2013g; see Appendix B), which is approximately 2,600 feet upstream of the Corridor.

The sheepnose mussel will potentially be impacted by the placement of five bridge piers in the Kankakee River and the likely installation of temporary cofferdams for pier construction and causeways in the river for bridge construction. The piers will permanently impact suitable habitat by displacing river bed with concrete piers. The temporary causeways and cofferdams will disturb river bed for the duration of construction. Upon completion of construction, the causeways and cofferdams will be removed and the river bed restored to preconstruction conditions.

Direct impact to sheepnose would occur if they are located in the immediate areas of the piers, causeways, and cofferdams. To minimize impacts, IDOT will commit to a relocation plan to find and remove all native mussels, including the sheepnose, from

areas of in-stream work. Further information on the relocation of native mussels is provided in Section 4.2. The relocation of sheepnose mussels will be coordinated with the USFWS. The relocation of all native mussels, including the sheepnose, will also be coordinated with the Illinois Department of Natural Resources (DNR).

Snuffbox Mussel

This project will *not affect* the snuffbox (*Epioblasma triquetra*). The snuffbox mussel was reported over a century ago in the Kankakee River; however, subsequent surveys in 1911, 1978, 1975-2000, and 1999 did not identify the species. A single fresh dead specimen was observed in 1988 in Will County. As only relict shells have been identified since 1991, the population, if present, may be small, localized, and of doubtful viability (Federal Register 2012).

Surveys for unionid mussel fauna associated with streams within the Corridor were conducted at selected locations by the INHS (INHS 2013g). The survey methods for unionid mussel fauna are presented in Section 3.2.1. No live or relict snuffbox mussels were identified during the 2012 surveys. Streams were surveyed by the INHS in Illinois in May and June of 2012 (INHS 2013g; See Appendix B). In the apparent absence of the species, effects to the snuffbox mussel are not anticipated as a result of the proposed project. Critical habitat has not been designated for the snuffbox mussel.

As described above, relocation of all native mussels will be conducted within areas of in-stream construction activity. The relocation will follow protocols established for the sheepnose and other native mussels if identified during future preconstruction mussel survey activities.

Eastern Prairie Fringed Orchid

This project *is not likely to adversely affect* the eastern prairie fringed orchid (*Platanthera leucophaea*). The eastern prairie fringed orchid was not found within the Corridor. The closest known eastern prairie fringed orchid population is present at Grant Creek Prairie Nature Preserve (USFWS 2010a), which is located approximately 3 miles north of the Corridor and is adjacent to I-55 south of Blodgett, Illinois. This population will not be impacted as a result of construction activities. However, lighting associated with the proposed project could impact the primary pollinator to the orchid which is the hawkmoth. IDOT and INDOT will determine locations where directional lighting would be used to reduce potential impacts to local hawkmoths and other wildlife that predate on hawkmoths. It should be noted that existing non-directional lighting is present within the vicinity of the above mentioned orchid population associated with I-55 and industrial facilities.

Lakeside Daisy

This project will *not affect* the lakeside daisy (*Hymenoxys herbacea*) as its suitable habitat, which is restricted to dry, thin-soiled, degraded prairies in which limestone or dolomite bedrock is at or near the surface or limestone quarries, is not present within or adjacent to the Corridor (Hilty 2012; USFWS 1990). Known populations of lakeside daisy are

located approximately 15 miles or more north of the Corridor. In Illinois, the INHS conducted botanical surveys within the project survey area between March 28, 2012 and September 31, 2012 (INHS 2013b; see Appendix C). Cardno JFNew conducted botanical surveys within the Indiana portion of the project survey area between September 12, 2012 and October 3, 2012 and from April 17, 2013 to May 2, 2013 (Cardno JFNew 2013c; see Appendix D). Lakeside daisy and suitable habitat for this species were not identified during the surveys. Critical habitat has not been designated for lakeside daisy.

Leafy Prairie-Clover

This project will *not affect* the leafy prairie-clover (*Dalea foliosa*) as its suitable habitat, which includes cedar glades, barrens, dolomite prairies, and prairie remnants on thin soil over limestone, is not present within or adjacent to the Corridor (USFWS 1996). Known populations of the leafy prairie-clover occur near Romeoville (Lockport Prairie Nature Preserve and Keepataw Forest Preserve) in the Des Plaines River Valley and on Midewin National Tallgrass Prairie (MNTP) property approximately 5 miles north of the Corridor (USFWS 1996; Hill 2007). In Illinois, the INHS conducted botanical surveys within the project survey area between March 28, 2012 and September 31, 2012 (INHS 2013b). In Indiana, Cardno JFNew conducted botanical surveys within the project survey area between September 12, 2012 and October 3, 2012 and from April 17, 2013 to May 2, 2013 (Cardno JFNew 2013c). The leafy prairie-clover and suitable habitat for this species were not identified during the surveys. Critical habitat has not been designated for the leafy-prairie clover due to threats to the species by poaching, vandalism, or collection (56 FR 19953-19959).

Mead's Milkweed

This project will *not affect* Mead's milkweed (*Asclepias meadii*). In Illinois, the INHS conducted botanical surveys within the project Study Area between March 28 and September 31, 2012 (INHS 2013). In Indiana, Cardno JFNew conducted botanical surveys within the project Study Area between September 12 and October 3, 2012 and from April 17 to May 2, 2013 (Cardno JFNew). Mead's milkweed was not identified during the surveys. Search results from the Illinois Natural History Database (INHD) revealed no records of Mead's milkweed within the survey area (INHS 2013b). The closest population of Mead's milkweed occurs approximately 10 miles north of the Corridor. According to the USFWS, at present, there are no viable Mead's milkweed populations in Illinois or Indiana (USFWS 2009). This population will not be impacted as a result of construction activities. Critical habitat has not been designated for Mead's milkweed.

Indiana Bat

This project is *not likely to adversely affect* the Indiana bat (*Myotis sodalis*). Indiana bats' hibernacula are not present within the Corridor. In 2012 and 2013, extensive surveys for the Indiana bat were conducted in suitable habitat within and adjacent to the Corridor. Mist netting for the Indiana bat was conducted at selected locations within the Corridor

in Illinois by the INHS and in Indiana by Cardno JFNew (2013; see Appendix I). Surveys followed the protocol in the *Draft Indiana Bat Recovery Plan* (USFWS 2007a). Surveys in 2013 followed the USFWS 2013 *Revised Range-wide Indiana Bat Summer Survey Guidelines* (USFWS 2013i). Acoustic surveys were used to supplement mist netting sites in Indiana by detecting bats that were in areas that could not be netted (i.e., woodlot edges, woodlot openings, or open water bodies). No Indiana bats were caught or identified during the mist netting and acoustic surveys. The location of each mist net site and acoustic site are depicted on Figure 5 in Appendix A.

In 2008 the USFWS indicated that the Indiana bat was not likely present in northeastern Illinois. In a letter dated October 23, 2012, the USFWS stated that existing data indicates that the Indiana bat is not likely present in Northeastern Illinois, or if present, occurs in very low numbers (USFWS 2012c). Both letters are included in Appendix M for reference.

There are no known records of the Indiana bat in Will County. Designated critical habitat exists approximately 44 miles to the west in LaSalle County, Illinois. Although Indiana bats often migrate from hibernacula, the only known recoveries of individuals from this location have been well to the south, including a site in northeastern Missouri. Therefore, this population will not be impacted as a result of the proposed project.

Suitable habitat for this species has been identified within the Corridor. The INHS has identified Site E located east of the Kankakee River and south of the Corridor within the survey area as suitable Indiana bat habitat (INHS 2013h). Cardno JFNew identified suitable habitat for the Indiana bat within the project survey area (Cardno JFNew 2013). Figure 5 in Appendix A depicts the locations of Indiana bat habitat within the Corridor.

The project will remove some standing snags and other trees. Impacts to Indiana bat habitat will be minimized by reducing the number of roost trees removed for the project, as well as by conducting all tree removal activities between October 15 and March 31 from areas of potential summer bat habitat.

Karner Blue Butterfly

This project will *not affect* the Karner blue butterfly (*Lycaeides melissa samuelis*) as its suitable habitat which includes oak savannas and pine barrens is not present within or adjacent to the Corridor. In addition, the wild blue lupine (*Lupinus perennis*) the only food plant for the Karner caterpillar, was not identified within or adjacent to the Corridor (INHS 2013b; Cardno JFNew 2013c). Extant populations in Indiana are restricted to dune and lake-plain communities associated with Lake Michigan (USFWS 2012a). The INHS conducted botanical surveys in the Illinois portion of the project survey area between March 28, 2012 and September 31, 2012 (INHS 2013b). Cardno JFNew conducted botanical surveys in the Indiana portion of the project survey area between September 12, 2012 and October 3, 2012 and from April 17, 2013 to May 2, 2013 (Cardno JFNew 2013c). Wild blue lupine and suitable habitat for wild blue lupine were not identified during the surveys. Critical habitat has not been designated for the Karner blue butterfly; however, one recovery unit is located along the Lake Michigan

shoreline, which is approximately 18 miles from the survey area within Lake County, Indiana.

Pitcher's Thistle

This project will *not affect* the Pitcher's thistle (*Cirsium pitcheri*) as its suitable habitat, which includes open dune ridges, dune blowouts, and disturbed mosaics in sand dunes, is not present within or adjacent to the Corridor. Known populations of Pitcher's thistle are located along the Lake Michigan shoreline, which is approximately 18 miles north of the Corridor. In Illinois, the INHS conducted botanical surveys between March 28, 2012 and September 31, 2012 (INHS 2013b). In Indiana, Cardno JFNew conducted botanical surveys within the project survey area during the growing season between September 12, 2012 and October 3, 2012 and from April 17, 2013 to May 2, 2013 (Cardno JFNew 2013c). Pitcher's thistle and suitable habitat were not identified during the surveys. Critical habitat has not been designated for Pitcher's thistle.

Eryngium Stem Borer Moth

This project *is likely to adversely affect* the Eryngium stem borer moth (*Papaipema eryngii*). Suitable habitat for the Eryngium stem borer moth includes moderately disturbed and somewhat undisturbed mesic and wet prairies and woodland openings that support communities of the moth's requisite host species, rattlesnake master (*Eryngium yuccifolium*), in population sizes of 100 individuals or greater (USFWS 2003). In Illinois, the INHS conducted surveys for the Eryngium stem borer moth where significant stands of the host plant were present based upon prior botanical surveys conducted for this project within the project Study Area (INHS 2013b; INHS 2013k; Appendix N). Based upon these surveys, the presence of the Eryngium stem borer was confirmed at three locations (Prairie Sites 1, 3, and 17; see Figure 7 located in Appendix A) and habitat for this species was confirmed at Prairie Sites 1, 2, 3, 4, and 17 (INHS 2013k). Therefore, it is anticipated that this species will be impacted as a result of construction activities and the placement of a pier for the overpass. Critical habitat has not been designated for the Eryngium stem borer moth.

Northern Long-Eared Bat

This project is *not likely to adversely affect* the northern long-eared bat (*Myotis septentrionalis*). Indiana bats' hibernacula are not present within the Corridor. Therefore, it is assumed that hibernacula for northern long-eared bats are not present within the Corridor.

The northern long-eared bat was captured during the 2012 and 2013 mist net surveys conducted for the Indiana bat in suitable habitat within and adjacent to the Corridor (INHS 2013c; Cardno JFNew 2013). One northern long-eared bat was captured at Donohue Grove (Site 1) located south of Donahue Road and east of Old Chicago Road, approximately 4.5 miles south of the Corridor in Illinois and two northern long-eared bats were captured at Cedar Creek (IEN 4) located west of Mount Street and south of 161st Avenue within the Corridor in Indiana (INHS 2013c; Cardno JFNew 2013). Two

northern long-eared bats were captured during the 2009 mist-net surveys along Jackson Creek within MNTP, specific locations unknown (McClanahan *et al*. 2009). In addition, supplemental acoustic surveys identified 56 unknown *Myotis* species during mist-net surveys (Cardno JFNew 2013).

Although specific habitat surveys for the northern long-eared bat were not conducted, it is assumed that suitable habitat for this species is present within the Corridor associated with large forested areas, wooded areas associated with Cedar Creek, and wooded corridors that connect to Donohue Grove and MNTP (INHS 2013c; Cardno JFNew 2013). The location of each mist net site and acoustic site are depicted on Figure 5 in Appendix A.

The project will remove some standing snags and other trees. To avoid direct impacts to the two bat species (Indiana bat and north long-eared bat) any tree removal activities required for the project will occur between October 15 and March 31. During this time frame, bats are most likely in their winter hibernacula and would not be utilizing forested areas for summer roosting and rearing of young. The number of potential roost trees to be removed for the project will also be minimized as much as possible as the project progresses.

No Indiana bat or northern long-eared bat hibernacula are known to be present within the Corridor. Therefore, it is assumed that hibernacula for northern long-eared bats are not present within the Corridor.

Species determined to have no effect as a result of the Illiana Corridor were dropped from further consideration. Species or suitable habitat for federally listed species determined to potentially be affected by the proposed project are discussed in subsequent sections of this document.

1.0 Introduction

The purpose of this Biological Assessment (BA) is to review the proposed Illiana Corridor in sufficient detail to: (1) determine whether the proposed action may affect any federally listed or proposed threatened or endangered species, candidate species, or listed or proposed critical habitat; (2) for species or critical habitats that may be affected by the proposed action, determine whether the action is or is not likely to adversely affect the species or critical habitat; and, (3) in those cases where the proposed action is likely to adversely affect species or critical habitats, to describe the manner in which the proposed action may affect species or critical habitat and other descriptions and analyses required for initiation of formal consultation pursuant to the regulations implementing Section 7 of the ESA (50 CFR 402.14(c)).

The lead agencies are IDOT, INDOT, and FHWA. The project is being processed as a tiered EIS which requires approval from the FHWA. The project will require a Section 404 permit from the US Army Corps of Engineers (USACE).

Congress has charged the FHWA with administrating the Federal-aid Highway Program under Title 23 and other associated laws. The FHWA's responsibility for administrating the Federal-aid Highway Program has been clearly outlined in the following legislation: The Intermodal Surface Transportation Efficiency Act of 1991, the Transportation Equity Act for the 21st Century of 1998, SAFETEA-LU of 2005 and MAP-21. The Federal-aid Highway Program is a state administered, federally assisted program. Thus, IDOT and INDOT have been tasked with carrying out the Federal-aid Highway Program efficiently and effectively to accomplish national, state, and local goals, to maintain and improve the national highway network throughout Illinois and Indiana, improve its operation and safety, and provide for national security.

The BA addresses the proposed action in accordance with Section 7 of the ESA of 1973, as amended. Section 7 of the ESA requires that, through consultation with the USFWS, federal agencies ensure their actions are not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat. It is FHWA's policy to confer on actions that may affect proposed species and critical habitats. This document evaluates the potential effects of the proposed Illiana Corridor to those species listed and proposed as federally threatened or endangered, as well as species with candidacy to be considered for protection under the ESA, within the action area.

The project is in the preliminary engineering and environmental study phase (Phase I). Detailed engineering is performed during the contract plan preparation and land acquisition phase (Phase II) which is followed by construction (Phase III). Since IDOT and INDOT are currently in Phase I, the details for all the components of the action are not complete. Therefore, assumptions are made about some components of the action in order to present a reasonable worst-case analysis of effects. In this way, the BA provides a basis for complying with the procedural and substantive requirements of Section 7 of the ESA for Phase II and Phase III to follow. Once detailed in the subsequent project

development phases, these items will be reviewed during the Section 404 permit process for consistency with the conclusions in the completed Section 7 consultation.

FHWA is the lead Federal agency funding, on a reimbursable basis, the proposed Illiana Corridor with the USACE involved in permitting the action pursuant to section 404 of the Clean Water Act. IDOT and the INDOT are the joint lead State agencies implementing the Illiana Corridor.

1.1 Consultation History

Coordination with the USFWS was conducted on September 17, 2012 and on April 16, 2013 during the Illiana Corridor Tier Two study presentation to the NEPA/404 Merger Team at the USEPA's Chicago office, on May 13, 2013 during a resource agency BA coordination meeting at the USFWS Barrington office, on May 22, 2013 during a monthly update conference call to the Merger Team of the Illiana Corridor Tier Two environmental study, and on August 6, 2013 during the NEPA/404 Merger team briefing meeting held at the USEPA's Chicago office. Meeting minutes for the above referenced meetings are included in Appendix E.

During the September 17, 2012 meeting, the focus of discussion was on responding to USFWS comments on the Tier One EIS in preparation for the combined Tier One FEIS/ROD. General comments discussed at this meeting included noise impacts and their effect on wildlife, avian resources, and grassland birds primarily at Midewin National Tallgrass Prairie (MNTP), and the need for Indiana bat surveys for the project. The USFWS indicated that the locations for mist net surveys for Indiana bats were to be coordinated with their office. The USFWS office for Indiana had approved the locations for surveys in Indiana prior to this meeting.

During the April 16, 2013 NEPA/404 Merger Team meeting, the USFWS clarified their April 4, 2013 request to survey six additional locations for the Indiana Bat in Illinois. IDOT/Bureau of Design and Environment (BDE) and USFWS have coordinated the location of appropriate mist netting sites with staff from the Forest Preserve District of Will County.

During the May 13, 2013 BA coordination meeting at the USFWS Barrington office, the project team requested the initiation of Section 7 Consultation with the USFWS. Major points of discussion included:

- The INHS mussel report was summarized, which confirmed that a fresh dead shell of the federally endangered sheepnose mussel was found approximately 2,600 feet upstream of the Illiana Corridor during surveys in the Kankakee River.
- IDOT indicated that they will assume the presence of the mussel within the project limits.
- The USFWS is in the technical assistance stage of the review process.

- The USFWS indicated that the informal consultation begins with a review of the BA, which determines whether formal consultation is necessary.
- IDOT asked if the use of piers within the Kankakee River would be considered a fatal flaw. USFWS indicated that they do not think piers would be a fatal flaw at this time.
- Commitments will be made to conduct mussel surveys and relocate all native mussels found during the surveys prior to construction, to minimize and avoid impacts.
- The statutory timeline for the USFWS formal consultation begins upon receipt of a request of the BA for formal consultation. The timeline includes a 90-day consultation period and a 45-day period for the USFWS to complete the Biological Opinion. If informal consultation were to continue, the USFWS have a policy (non-statutory) of responding to written requests for concurrence within 30 days.
- The FHWA indicated that the review timelines are critical as the ROD cannot be signed until the Section 7 consultation is completed. A summary of the BA and agency coordination is required for the Draft EIS. Approval of the BA for the DEIS is not required.
- All species listed for Will and Lake Counties are included in the BA regardless of whether there are potential impacts to additional species.
- USFWS will determine whether a separate BA for Illinois and Indiana will be required for the entire project since this project crosses state lines and USFWS jurisdictional offices, or if a single BA document can be prepared.
- For the Indiana bat, additional areas near the proposed I-65 interchange were added to the project and a 2013 survey was conducted for these areas. The INHS conducted surveys for the additional areas in Illinois in 2013.
- There are new protocols in 2013 for bat surveys. This information was provided to the survey teams. The INHS bat report was completed in August of 2013.
- A table summarizing all wetland sites in Illinois that have floristic quality indices over 20, which is the threshold for potential surveys for the eastern prairie fringed orchid, has been prepared. The table also calls out plant associates of the eastern prairie fringed orchid. USFWS will review the list and coordinate the locations of additional eastern prairie fringed orchid surveys.

During the May 22, 2013 NEPA/404 Merger monthly update via conference call, the project team reviewed the environmental studies underway, including the BA. USFWS confirmed that a single BA would be acceptable for submittal to the USFWS. The USFWS indicated that a 2013 survey is needed in the amended Environmental Survey Area for the Eastern prairie fringed orchid and should be completed within the June 28th survey window. IDOT/BDE stated that 14 survey locations have been identified, in addition to other eligible botanical areas.

On October 24, 2013, a draft of the BA was presented to the Indiana and Chicago Field offices of the USFWS. A cursory review of the contents of the BA was completed and a discussion of the proposed schedule for the Illiana Corridor was outlined to the USFWS. The USFWS indicated that they will complete an information review within 30 days, but would have to confer with other offices. Coordination with other offices will be necessary because of the new listing for the northern long-eared bat.

1.2 Description of the Proposed Action

The Illiana Corridor is a new fully access controlled highway connecting I-55 in northeastern Illinois to I-65 in northwestern Indiana, which would be operated as a toll facility. The Corridor is approximately 47-miles long having an east-west orientation with a western terminus at I-55 just north of the City of Wilmington in Illinois, and an eastern terminus at I-65 approximately 3 miles north of State Route (SR) 2 in Indiana. The Illiana Corridor is not part of a larger project; however, the eastern terminus of the project at I-65 is being constructed to allow for extension in the future if INDOT ever considers an extension necessary. There are no future extensions in any multi-year plans at this time. The purpose of the Proposed Action is to provide a sustainable transportation solution that would improve east-west connectivity in the general vicinity of I-55 to the west and I-65 to the east in the survey area, in a manner consistent with the commitments in the Tier One ROD, and that may be adapted to sustainable future local and regional transportation and economic development goals so as to:

- Improve regional mobility, travel times, and access to jobs by addressing growing east-west regional and national traffic demand that is required to traverse the region and South Sub-Region regardless of the trip origin or destination;
- Alleviate local system congestion and improve local system mobility, and address lack of connectivity for Will, Kankakee, and Lake Counties to meet and support projected traffic growth from increased population, employment, transportation, and economic development including the lack of continuous, higher functional classification east-west travel routes in the survey area, and improving travel times; and
- Accommodate market demands for increasing freight logistic transportation and more efficient freight movement including better accommodation of regional and national truck trips.

Upon concurrence with the BA, coordination with the USFWS should be continued throughout the duration of the project to ensure the conservation measures are carried out in a timely and effective manner. A commitment will be added to the FEIS document referencing requirements and recommendations within the BO. The BO will be an appendix to the FEIS. Any commitments will be incorporated into the contract plans and documents. The consultation is prepared to address the requirements of the USACE for their review under Section 404 of the Clean Water Act. The section 7 consultation completed by FHWA for the proposed Illiana Corridor should encompass

effects of the Army COEs 404 permit for the action. An Individual Section 404 permit will be acquired during Phase II of the project. Project Footprint

The proposed alternatives will be approximately 400 feet in width, which will vary for interchanges and storm water features. The project will require the acquisition of between approximately 3,759 acres to 4,011 acres for the proposed highway.

1.2.1 Construction

The proposed action consists of constructing, operating, and maintaining the Illiana Corridor, a new limited access highway.

The project will be constructed in two sections simultaneously; the Illinois and the Indiana section. These two sections may be awarded to two different contractors. The construction of the Illiana Corridor will be completed by the contractors under supervision by IDOT, INDOT, and the FHWA according to the contract plans, special provisions, USACE permits, and commitments made during Phase I and II development. Commitments will be discussed with the contractor during preconstruction meetings.

Construction of the Illiana Corridor is anticipated to include, but is not limited to, clearing, grading, in-stream work/bridge construction, and paving. Construction activities are primarily grading and earth moving activities as well as the construction of bridges. Depending on topography, cut and fill will occur. Grading will be limited to the area within the footprint of the highway and related stormwater management features. Equipment to be utilized includes earth graders, scrapers, road graders, bulldozers, and other associated equipment. This equipment will be used to establish the grade of the roadway and stormwater swales and ditches along the length of the project. Paving equipment will be utilized after grading activities are completed. At this time, it is not decided if the roadway will be concrete or asphalt. Temporary material plants may be established along the route. These facilities will be sited away from federally listed species and their habitat, which will be identified in the contract plans.

1.2.1.1 Suggested Construction Sequence

A more detailed sequence will be developed during Phase II for both the Illinois section and the Indiana section of the project (contract plan preparation, land acquisition, utility coordination and permitting). A feasible general construction sequence for the proposed roadway in the area is presented in the following paragraphs:

- Installation of erosion and sediment control (ESC) features and the removal of mostly woody vegetation;
- Construction of a water quality basin and swales;
- Construction of bridges and culverts;
- Construction of the paved surfaces and interchanges;

- Establishment of final grades for the stormwater features and BMPs in the right-of-way; and,
- Establishment of permanent vegetation on non-paved right-of-way.

1.2.1.2 Construction Access

The contactor(s) is responsible for locating all areas needed for construction access, which are the areas needed to access the areas of construction. Construction access areas cannot be located in floodplains, wetlands, "Waters of the US" (WOUS), nature preserves, forest preserves, public parks, protected lands, or areas identified as habitat or potential habitat for federally listed species. Ideally, access will be from existing pavement. The contractor(s) will identify the construction access areas prior to construction at preconstruction meetings. Areas to be avoided that contain federally threatened or endangered species and/or suitable habitat for federally protected species will be identified on contract plans provided to the contractor(s) prior to identification of access routes.

1.2.1.3 Staging/Laydown Areas

The contactor(s) is responsible for locating the staging areas. Staging areas cannot be located in floodplains, wetlands, WOUS, nature preserves, forest preserves, public parks, protected lands, or areas identified as habitat or potential habitat for federally listed species. The contractor(s) will identify staging areas prior to construction at preconstruction meetings. Areas to be avoided that contain federally threatened or endangered species and/or suitable habitat for federally protected species will be identified on contract plans provided to the contractor(s) prior to identification of staging areas.

1.2.1.4 In-Stream Work (Bridge and Culvert Construction Areas)

Based on an assessment of the streams and associated riparian areas as well as large wetland complexes, a total of 27 rivers/creeks and their tributaries occur within the Corridor. 11 of these 27 rivers and creeks as well as one (1) large wetland complex are recommended to serve as wildlife crossings. Many of the stream crossings will include precast concrete culverts or corrugated metal pipes. As required by permit conditions, all in-stream work will be constructed in dry conditions. As many of the streams to be crossed are intermittent, dewatering will not be required for many of the crossings. For larger crossings, bridges may be proposed that will require the construction of abutments, and in some cases, piers may be required in the streams. Dewatering may be required for perennial streams. Temporary dewatering plans will be developed and approval is required for permitting. Pier construction may also require temporary coffer dams.

Other construction activities will include the development of stormwater management features. These features would include roadside drainage ditches, compensatory storage basins, and stormwater detention basins.

All in-stream work will be performed in accordance with Chicago District, USACE – Regulatory Branch Requirements for In-stream Construction Activities (USACE 2013).

This includes the use of non-erodible cofferdams, filtering of dewatering operations, timber/work mats and the use of low ground-pressure equipment for work in wetlands (where practical). Section 404 permits have minimum standards and conditions for the use of cofferdams during construction. Contractor(s) will be required to abide by these conditions during construction(USACE 2013).

As previously mentioned, since in-stream work is required, the contractor(s) will be required to restore the river substrate to approximate preconstruction conditions and restore habitat for aquatic species. Permanent impacts that will limit restoration includes the new piers for the bridge. The following are general recommendations for construction sequencing, with specific detail regarding in-stream work.

- Construction Sequencing: Planning the sequencing of in-stream construction provides an opportunity to minimize potential impacts to water quality through the proper use of Best Management Practices (BMP). Ground water levels are high in spring and rainfall/snow melt tends to run off making in-stream work more risky than other seasons when precipitation may infiltrate or evaporate more. Winter provides low flow conditions and frozen ground that can support equipment, but vegetative stabilization of disturbance is not possible, and construction activity such as concrete pouring/curing is inhibited. Summer construction can take advantage of low flows, but locally heavy thunderstorms are possible. Even if a construction area is not affected by downpours, rain in the watershed will cause a rise in creek discharge that will affect in-stream work. Completing construction activities in autumn has both the benefit of low flows and the ability to establish vegetative stabilization of disturbance prior to the end of the growing season.
- Bypass Flow: Bypassing flows through the existing structure may or may not be feasible due to constraints on where the flow must be located during construction. When the structure must remain where it is, then diversion of flow through-pipe is preferable to pumping based on cost and reliability. Issues with pipe bypass include restriction of flow that might occur, which can cause increase in flood elevations upstream. The discharge point of the temporary diversion pipe must be carefully selected and stabilized to prevent erosion.

1.2.1.5 Kankakee River Bridge

Due to the size of the proposed Kankakee River crossing, a variety of construction practices may be utilized. Construction will be staged as much as possible from adjacent upland areas in order to minimize temporary impacts. The width of the river at the proposed crossing may preclude the ability to construct the bridge from the banks. As a result, it is anticipated that temporary causeways will be required. If temporary causeways are used, the size of the causeway would be limited to less than one-half the width of the river at any time during any construction stage. The causeway would be utilized to set beams and construct piers as needed. Causeway plans will be developed and will require approval from the USACE during the permitting process.

A construction staging area is typically required at the base of a bridge to construct piers and erect beams. The staging area must be graded level adjacent to the piers to allow for

the safe operation of cranes and drill rigs. Based on the crane size needed for this project, the staging area would occupy the entire proposed alignment area. Additional space would also be needed to create a level platform for crane operations. The area needed to create a level platform for crane operations would be located within the approved Corridor. The contractor(s) will be alerted to this in contract plans. Beam erection will be accomplished by conducting all crane operations from within the Kankakee River or from adjacent upland areas along the banks of the Kankakee River.

In addition, temporary sheet piling may be utilized at the boundary of the staging area to limit the size of the graded platform needed for drill rig operations. If sheet piling is utilized, as opposed to cutting back slopes for the creation of the staging area, impacts could be minimized to the shoreline of the Kankakee River. The sheet piling would be removed at the conclusion of substructure construction and the work area would be regraded to match original ground contours.

The flow regime, given the reduced or restricted channel from causeway construction, would increase the velocity given the smaller channel cross sectional area. This is a temporary interim condition only associated with this particular stage of construction. It has been shown that shifts in river bed composition can result from rapid increases and decreases in stream velocities, which can in turn diminish habitat for mussel species (Neck and Howells 1994). Once the in-stream work is completed, the contractor will be required to re-establish river contours and stream bed composition within acceptable construction tolerances.

The temporary features within the Kankakee River are anticipated to be in place as long as 2 years during the construction of the Kankakee River Bridge. It is anticipated that the bridge construction will extend over two construction seasons.

1.2.2 Time Frame of Action

As indicated in Section 1.0, the Illiana Corridor is currently in the Tier Two analysis. In Tier Two, the focus has shifted from the original broad 952 square-mile Study Area to the the Corridor. The Tier Two analysis involves more detailed engineering and environmental studies to define a preliminary design and footprint of the project, impacts, as well as financing options. Some of the engineering work includes interchange locations and layout, roadway location and alignment, drainage studies, local road closures and determining overpass or underpass opportunities. The Tier Two Record of Decision is anticipated in the spring of 2014.

The project is on the IDOT 5-Year Highway Improvement Program for FY 2013-2017. Within this time frame the Phase II activities, such as the detailed engineering design, contract plans and specifications, storm water pollution prevention plans, property appraisals and land acquisition, and Section 404 permit submittals will occur. Phase III construction will follow.

Construction is anticipated to begin early 2015 and end at the end of 2017. As indicated above, Phases II (contract plans and land acquisition) and III (construction) occur within

the IDOT 5-year program for FY 2013-2017. Construction should start at the end of the program year (FY 2016-2017). The construction of the Illiana Corridor should take approximately 3 years.

Conservation Measures See Section 4.0 Effects of the Action for details on proposed conservation measures for the federal threatened, endangered, proposed for listing, and species with candidacy to be considered for protection under the ESA that may be affected as a result of the proposed project.

1.2.2.1 Mitigation: What Kind and Who is Responsible?

The proposed mitigation plan for the project has not been finalized at this time. For wetland mitigation, two separate plans have to be developed to address each state's specific wetland compensation requirements. The use of wetland banks will be investigated as the current Interagency Cooperative Agreement requires that large macrosites, such as banks, be considered first over other mitigation options. The INHS has identified potential wetland compensation sites to be considered once wetland impacts and mitigation ratios have been established. Currently in Indiana, preliminary studies for wetland mitigation have been initiated including meetings with agencies and field review. Potential wetland compensation sites to be considered once wetland impacts and mitigation ratios have been established during the permit process.All mitigation for the project will be constructed or installed prior to the commencement of roadway construction activities. Mussel surveys will be conducted prior to the Kankakee River bridge construction. All native mussels found will be relocated to suitable habitat. As discussed in Section 1.2.3, BMPs will also be implemented in proximity to the bridge over the Kankakee River to minimize impacts to water quality. The proposed project could impact the primary pollinator to the eastern prairie fringed orchid, which is the hawkmoth. IDOT and INDOT will determine locations where directional lighting for operational purposes will be used to reduce potential impacts to local hawkmoths and other wildlife that prey on hawkmoths. The project will remove some standing tree snags and other trees. Impacts to the Indiana bat and the northern long-eared bat will be minimized by reducing the number of roost trees removed for the project, as well as by conducting all tree removal activities between October 15 and March 31 from areas of potential summer bat habitat. IDOT will obtain an Incidental Take Authorization (ITA) from the Illinois DNR for impacts to the Eryngium stem borer moth and will detail the mitigation measures. For unavoidable impacts to listed species, IDOT and INDOT will develop the final mitigation plan through the consultation process with the USFWS.

Mitigation is being provided for impacts to wetlands, WOUS, and tree resources. IDOT and INDOT are responsible for accomplishing the mitigation according to the commitments made to the local communities, regulatory agencies, and natural resource agencies.

- Wetlands: The project will impact 107 to 132 wetland sites depending on the selected alternative, involving the loss of approximately 62 to 87 acres of wetlands. The mitigation of these wetland impacts is under discussion with the USACE. IDOT

and INDOT will provide mitigation for the number of acres of wetland credits required per USACE approval of the mitigation ratios. IDOT and INDOT are responsible for the wetland mitigation in their respective states. In addition to the USACE mitigation ratios, each state will have to be in compliance with state requirements for wetland mitigation which can be more stringent than federal regulations.

- Trees: Generally, trees removed for this improvement will be replaced as close as possible to the areas from which they were removed. However, this will not be possible in all areas.

1.2.3 Best Management Practices

During the development of the Tier Two DEIS, a Sustainability Opportunity Areas Technical Memorandum was developed to outline potential practices that will be utilized during construction and during the operation of the roadway after construction is completed (CBBEL 2013; see Appendix F). This Technical Memorandum focuses on identifying a variety of post construction BMPs and Opportunity Areas where these BMPs could be implemented to minimize or mitigate potential impacts of the project on wetlands, creeks, and other natural resources and the built environment.

BMP Opportunity Areas were identified through a collaborative, interdisciplinary approach known as Context Sensitive Design (CSD). CSD implements theoretical and practical decision-making and takes into consideration the "context" of the surroundings, along with input from key project stakeholders. This process was used to identify appropriate BMPs that could be implemented to minimize impacts while appropriately fitting into the landscape.

The CSD process emphasizes that transportation facilities should fit within their physical settings and preserve scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. CSD asserts that decisions should be responsive to the context of the footprint to the surrounding area, not simply responsive to the design process. CSD seeks to balance the need to move vehicles efficiently and safely with other desirable outcomes, including environmental sustainability. During the design process, opportunities are sought to avoid, minimize, restore, or enhance habitats in order to provide a net benefit to the environment. For instance, if a proposed highway passes through a wetland area, the roadway design will include elements to minimize impacts to wetlands, and also mitigate, to the extent possible, the impacts that would otherwise occur to the area's ecology and water quality. Regional green infrastructure was also taken into consideration when identifying BMP Opportunity Areas.

As part of the roadway design, a suite of BMPs will be implemented that will:

- Provide water quality protection or improvement by enhancing filtration and infiltration of stormwater prior to discharging from the site and

- Facilitate safer movement of terrestrial (flightless) wildlife across the project footprint.

Impacts to wetlands and waters of the US, as well as forested areas, will also be achieved through the use of BMPs.

Various water quality BMPs that will be implemented include swales and basins, and infiltration areas.

Swales and detention basins will be constructed along the roadside wherever they can physically be installed and provide a functional benefit. The BMP swales and basins will be designed with gravel bases that, to the extent possible, would be over-excavated to intersect with the underlying parent sands and gravels. The BMP swales and basins will be designed to capture a water quality volume, which would reduce the total surface water discharge volume from the site. The BMP swales and basins will be planted with native vegetation and undergo long term maintenance and management by IDOT and INDOT within roadway rights-of-way to promote native dominated plant communities.

BMP swales/basins will generally function as detention, compensatory flood storage and water quality treatment basins that are dual purposed BMPs. These facilities will be established with native vegetation and typically have wetland bottoms. Based on the underlying geology, these areas will be designed to maximize infiltration through a connection to underlying sands and gravels. The basins will be designed to capture additional sediment, nutrients, and oils that may not have been filtered out by other BMPs located upslope. The detention basins will also be designed to capture a water quality volume that would result in a theoretical zero discharge of runoff generated from within the footprint for the design storm event. Currently being considered is a water quality volume based on a 0.75 inch event. Rain events at or below this volume would be captured onsite and infiltrated, evaporated or evapotranspirated.

At each stream, creek, woodland, wetland, or ditch crossing, it is likely that terrestrial wildlife would be present and seeking to cross the footprint. Potential wildlife crossing opportunity areas have been identified and could be implemented to facilitate safe passage across the Illiana Corridor footprint, in order to minimize hazardous wildlife vehicle interactions.

The BMPs identified in the Sustainability Opportunity Areas Technical Memorandum (Appendix F) will be implemented during the design phase. The BMPs will be implemented where existing and future conditions make their use practical.

BMPs will be utilized throughout the project. Construction BMPs will include measures to minimize sediment transport to local waterbodies and to offsite areas. Erosion protection will be used where soils are exposed to wind and water. Detailed soil erosion and sediment control plans will be developed during the design phases of the project utilizing the practices outlined in Chapter 41 of the IDOT BDE Manual (2010) and in the Indiana Storm Water Quality Manual (2007).

BMPs will be utilized to improve the quality of runoff draining into adjacent waterways, with particular attention to the Kankakee River. Stormwater runoff from the proposed bridge over the Kankakee River would be routed to treatment basins on either side of the river.

The proposed bridge over the Kankakee River is located adjacent to sensitive ecological systems that include a forested seep, endangered mussel species, and state listed plant species located along the bluffs of the river. The state listed plant species is located approximately 1 mile northwest of the Corridor. Therefore, impacts to this species will not occur.

1.2.3.1 Soil Erosion and Sediment Control

The contractor(s) will be required to identify persons at the preconstruction meetings who shall be responsible for ensuring the soil erosion and sediment control work is completed in a timely manner. The contractor(s), IDOT, and INDOT shall schedule and conduct jobsite inspections to review and designate locations and types of erosion control systems to be placed. The inspections shall be conducted prior to beginning any work which will disturb existing drainage, disturb soil, and/or any type of work that requires erosion and/or sediment control measures.

The temporary erosion and sediment control systems (IDOT *Standard Specifications for Road and Bridge Construction* [2012 and 2014] and INDOT *Standard Specifications* [2014]) represent the minimum systems anticipated for the project. Revisions or modifications of the erosion and sediment control systems shall have the Engineer's written approval. Work shall be coordinated such that no more than a total of 10 acres are disturbed at a time. Temporary erosion control systems shall be coordinated with the permanent erosion control features to insure economical, effective, and continuous erosion control.

Completed slopes will be seeded and mulched as the work proceeds. Permanent seeding is used whenever possible. Under no circumstances will the contractor prolong final grading and shaping so that the entire project can be permanently seeded at one time (IDOT *Standard Specifications for Road and Bridge Construction* [2012 and 2014] and INDOT *Standard Specifications* [2014]).

1.2.3.2 Dust

The contractor(s) will be required to control the dust and air-borne dirt generated by construction activities. Contractor(s), IDOT, and INDOT will meet to review the nature and extent of dust generating activities and cooperatively develop specific types of control techniques appropriate to those specific situations. Dust control measures as indicated in the Dust Control Plan, or as directed by the Engineer, shall be readily available for use onsite. Sample techniques that may warrant consideration include minimization of soil track-out onto publicly-traveled roads; reduction of vehicle speeds on unpaved surfaces; covering haul vehicles; and/or applying chemical dust suppressants or water to exposed surfaces, particularly to surfaces on which construction vehicles travel (IDOT *Standard Specifications for Road and Bridge Construction* [2012 and 2014] and INDOT *Standard Specifications* [2014]).

1.2.3.3 Preparation of the Storm Water Pollution Prevention Plan

A storm water pollution prevention plan (SWPPP) is essential in the development of construction plans and permanent BMPs. The SWPPP will be written early in Phase II (contract plans, land acquisition, utility coordination and permitting) and will provide detailed design guidance and construction protocols that can be incorporated directly into the construction plans and specifications.

Sediment is the primary source of pollutants from construction sites. However, spills of fuel or chemicals are always a possibility. Further, erodible materials such as structural fill or aggregate may also be stockpiled in the work area. Therefore, all staging of erodible materials and chemicals should be located where migration to a stream or wetland is not possible. Stockpiles will be determined during the construction phase, but they will not be allowed within 100 feet of a drainage channel or stream, overland flow route, floodplain, or area subject to inundation. Any stockpiles that are to remain in place for longer than 3 days will receive erosion control measures. Any stockpile in place longer than 30 days will receive temporary seeding.

1.3 Action Area

The Action Area includes all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action (50 CFR 402.02). The Action Area is defined by measurable or detectable changes in land, air, and water or to other measurable factors that would result from the proposed action. The Action Area is not limited to the "footprint" of the project but rather encompasses the aerial extent of the biotic, chemical, and physical impacts to the environment resulting from the action. The Action Area is presented in Figure 1.

1.3.1.1 Habitat between Work Areas and Endangered Species Location

A fresh dead specimen of the sheepnose was collected approximately 1,200 feet downstream of the confluence of the Kankakee River with Forked Creek during field surveys by INHS biologists (INHS 2013g), which is approximately 2,600 feet upstream from the Corridor. The site where the sheepnose mussel specimen was found consists of forested riparian areas and the Kankakee River. Habitat for the eastern massasauga, Indiana bat, the northern long-eared bat, eastern prairie fringed orchid, Mead's milkweed, and the Eryngium stem borer moth are also present within the project vicinity.

1.3.1.2 Permanent versus Temporary Impacts

The construction of the Illiana Corridor will convert areas of vegetation to pavement (approximately 717 acres to 737 acres, [range includes Alternatives 1 to 3] inclusive of edge of shoulder and all structures). These conversions are permanent impacts. Other vegetated areas will be disturbed and reseeded (approximately 2,119 acres to 3,590 acres [range includes Alternatives 1 to 3]) and are considered temporary impacts. Temporary impacts are also anticipated within the Kankakee River for the construction of bridge piers. The temporary features will include cofferdams at the pier locations and temporary causeways for bridge deck construction.

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2.0 Description of Species and their Habitat

2.1 Eastern Massasauga

The eastern massasauga lives in shallow wetlands and adjacent uplands in portions of Illinois, Indiana, Iowa, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin, and Ontario. Until 2011, the eastern massasauga was considered one of three recognized subspecies of massasauga. Recent information indicates that the eastern massasauga represents a distinct species, and was recognized as such beginning in 2011 (USFWS 2013b).

Although the current range of the eastern massasauga resembles the species' historical range, the geographic distribution has been restricted by the loss of the species from much of the area within the boundaries of that range. A recently completed extinction risk model, and information provided by species experts, indicates that other populations are likely to suffer additional losses in abundance and genetic diversity and some will likely be extirpated unless threats are removed in the near future.

The eastern massasauga is listed as a candidate for federal species status. The eastern massasauga has been sufficiently studied to be proposed for threatened or endangered status (USFWS 2013b). Currently, the eastern massasauga has a listing priority number of 8 (Federal Register 2011). The listing priority number indicates the general order in which species will be proposed for federal threatened or endangered species status, with one being the highest priority and 12 being the lowest. At this time the USFWS has not determined an emergency listing is warranted (USFWS 2013b).

2.1.1 Species Biology

2.1.1.1 Species Description

Eastern massasaugas are small snakes with thick bodies, heart-shaped heads and vertical pupils. The average length of an adult is about 2 feet. Adult eastern massasaugas are gray or light brown with large, light-edged chocolate brown blotches on the back and smaller blotches on the sides. The snake's belly is marbled dark gray or black and there is a narrow, white stripe on its head. Its tail has several dark brown rings and is tipped by gray-yellow horny rattles. Young snakes have the same markings, but are more vividly colored (USFWS 2013b).

As reported by Szymanski (1998), Evans and Gloyd (1948) identified the chief diagnostic characters of this species are the number of ventral scales (male: 133-146; female: 139-149); the number of dorsal blotches (21-37 red-brown colored blotches), and general coloration, particularly the degree of mottling or blotching of the ventral surface (ground color of gray-brown with a very dark venter). Other distinguishing features include 25 mid-body dorsal scales, a moderate size head with a non-symmetrical dorsal pattern, stout and subcylindrical body tapering toward the head and tail, and a rounded snout and a small but well developed rattle. Average lengths for males and females are

612 mm (24 inches) and 523 mm (20 inches), respectively. Young are well-patterned and the rattle is represented by a single “button” (Hallock 1991).

2.1.1.2 Life History

Eastern massasaugas begin to emerge from their hibernacula during late March to early April when shallow ground temperatures are near air temperatures. Hibernacula are primarily in crayfish burrows and typically located in wetlands and other poorly drained areas. The presence of water that does not freeze is an important determinant of hibernaculum suitability as they apparently remain in the water through much of the overwintering period. As reported by Szymanski (1998), Maple (1968) postulated that eastern massasaugas, by overwintering in moist soil, avoided lethally low temperatures and reduced the risk of desiccation. It is hypothesized that eastern massasaugas remain very close to their hibernacula in the spring and fall as they are susceptible to death from a hard frost. Szymanski (1998), reports studies that indicate hibernacula site fidelity may occur but is not den specific.

After emerging from their hibernacula, nongravid females and males search for food and mate. Eastern massasaugas are most noticeable during April, May, and October and most active during the warmest part of the day (1200 to 1600 hours). Eastern massasauga predators include carnivorous mammals, birds-of-prey, and ophiophagous snakes. Eastern massasaugas return to their hibernacula during mid-September through late October (Syzmanski 1998).

In studies summarized by Szymanski (1998), mating season occurs from July to September. Like all rattlesnakes, eastern massasaugas bear live young. The young actually hatch from eggs while still in the female's body. Depending on the health of the individual, adult females may bear young every year or every other year. When food is especially scarce they may only have young every 3 years. Eastern massasaugas that have young every year, mate in the spring and bear their young in late summer or early fall. In contrast, snakes that have young every other year, mate in autumn and bear young the next summer. Litter size varies from 5 to 19 young (USFWS 2013b). Brood size appears to vary greatly. Szymanski (1998) reports studies that indicate mean brood size varied between 5.2 and 11.6 and hypothesize brood size may be related to body size.

2.1.1.3 Population Dynamics

In Szymanski (1998), Hay (1893) reportedly described the massasauga as "extremely abundant" in Illinois. Conant (1951) characterized the massasauga as common at several localities in Ohio in 1938. Vogt (1981) documented a report of "thousands of massasaugas" near Portage, Wisconsin in 1849. Minton (1972) stated that massasaugas were once plentiful throughout the northern Indiana lake plains. However, by the mid-1970s, massasaugas were recognized as nationally imperiled, and believed to be threatened in more than 75 percent of their range (Ashton 1976). Even within the most robust populations, noticeable declines were apparent by 1972 (Vogt 1981). Although the current range of the massasauga resembles the species’ historical range, the geographic distribution has been restricted.

There is a paucity of published data regarding the population ecology of massasaugas. A few studies, however, provide some insight on population size and density. Studies as reported by Szymanski (1998) specify densities of 0.59 to 3.78 and 0.56 to 2.53 individuals per hectare.

2.1.2 Habitat

Eastern massasauga habitat includes a broad array of vegetative communities; including bogs, marshes, old fields, prairies, meadows, fens, coniferous forests, peatland, swamp, forest, sedge meadow, and mesic grasses adjacent to lowland hardwood forest (Szymanski 1998). Eastern massasaugas are known within wetlands; however, they tend to avoid open water (Szymanski 1998). They have been observed swimming across narrow stretches of water in Missouri, Wisconsin, and Ontario (Seigel in litt. 1996; King in litt. 1996; Villeneuve pers. comm. 1996; Szymanski 1998). Reinert and Kodrich (1982) (as reported by Szymanski 1998), based on radio-telemetry studies (n=25) in Pennsylvania, reported that snakes utilize low, poorly drained habitat in the spring and fall, and shift to sparsely vegetated and dry areas in the summer.

2.1.3 Species Status

2.1.3.1 Rangewide Status

Each state and Canadian province across the range of the eastern massasauga has lost more than 30 percent of their historic populations, and most areas have lost more than 50 percent of their historic populations. Furthermore, less than 35 percent of the remaining populations are thought to be secure (USFWS 2011b). Of the 25 known populations in Illinois, 18 are extirpated and two are likely extirpated (Szymanski 1998). Of the 44 known populations in Indiana, 12 are extirpated, 3 are likely extirpated, and 10 are unknown (Szymanski 1998). Currently, the species may only be extant in four counties within Illinois, in Cook, Clinton, Piatt, and Knox counties, and all extant populations are in decline and considered vulnerable (INHS 2009).

Historically, massasaugas occurred throughout the northern four-fifths of Illinois. Today, the range is greatly reduced, and extant populations are widely disjunct and isolated. Imminent threats, limited habitat, and small population size threaten the continued survival of the massasauga in Illinois (Szymanski, 1998).

Historically, massasaugas were widely distributed across the northern half of Indiana. The range has been severely restricted and currently includes only a third of the area that it once covered. The largest and most robust populations were along the Lake Michigan lakeshore and the northeastern corner of the state. Although numerous distinct occurrences exist across the state, many of these were historically interconnected populations forming metapopulations. Remnants of five metapopulations still exist today but, in all, habitat fragmentation has eliminated some occurrences and isolated others. For example, many of the sites along Lake Michigan have been extirpated and only a few small, isolated occurrences remain (Szymanski 1998).

Of the 44 historical populations in Indiana, 12 and possibly three others are extirpated. Massasauga occurrence at 10 sites has not been documented since mid-1980s, and the

current status of these populations is unknown. At this time, no sites in Indiana are considered secure, 8 are declining or presumed declining and 11 have unknown population trend (Szymanski 1998).

2.1.3.2 Critical Habitat

Critical habitat has not been designated for this species.

2.2 Sheepnose mussel

The federally endangered sheepnose mussel, also known as the bullhead mussel, is a moderately thick-shelled species. The sheepnose is found in large rivers in Alabama, Illinois, Indiana, Iowa, Kentucky, Minnesota, Mississippi, Missouri, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and Wisconsin (USFWS 2013f). The known natural host fish for the sheepnose is the sauger (*Sander canadensis*), though several cyprinids have recently been shown to metamorphose sheepnose glochidia in the laboratory. The sauger is infrequently taken in the Kankakee River but is known from the Illinois River, to which the Kankakee River is tributary. The sheepnose was listed in 2012 as a federally endangered species by the USFWS.

The sheepnose has been eliminated from two-thirds of the streams from which it was known historically (USFWS 2013f). Quantitative historical abundance data for the sheepnose is rare, however it is historically known from 77 streams (including one canal) in 15 states (Ohio River Valley Ecosystem Team 2002). The sheepnose has been eliminated from hundreds of miles of rivers in the Illinois, Cumberland, Mississippi and Tennessee River basins (USFWS 2013f). Extant populations of the sheepnose are known from 26 streams in 14 states (Ohio River Valley Ecosystem Team 2002).

Indiana populations of sheepnose in the Kankakee River are thought to be extirpated due to extensive channelization during the early 20th century. A 1912 report from the US Bureau of Fisheries (Clark and Wilson) confirms sheepnose at Momence, Illinois. There are 22 records of sheepnose from the INHS mussel database for sheepnose in the Illinois portion of the Kankakee that span from 1960 to 2010. A 2012 collection from a shoreline muskrat/raccoon midden confirmed the presence of a fresh dead (tissue present) sheepnose from the Kankakee River at Wilmington, Illinois.

2.2.1 Species Biology

2.2.1.1 Species Description

The sheepnose mussel can grow to 5 inches in length. The growth rings show a distinct stop and often have swellings or nodules arranged in a row on the end of the growth ring. The shape of the shell is elongate ovate, moderately inflated, and with the valves being thick and solid (Ohio River Valley Ecosystem Team 2002). Pseudocardinal teeth are well developed and prominent. The nacre is white with some luster. External shell color ranges from light tan through greenish tan to chestnut brown without rays.

2.2.1.2 Life History

Male sheepnose mussels release sperm into the river current, which are captured as females siphon water for food and respiration. Within special gill chambers, fertilized eggs develop into microscopic larvae called glochidia. After they mature, female mussels expel the glochidia, which must then attach to the gills or fins of sauger to continue developing into a juvenile mussel.

Sheepnose glochidia are expelled in masses of mucus called conglutinates. Many conglutinates are discharged at a time and the unbroken conglutinates look like small worms or leeches. Each conglutinate may contain hundreds of individual glochidia (Haag 2012). Sheepnose conglutinates are narrow, lanceolate shaped, flattened and are colored reddish or pink. The dimensions of the sheepnose mussel conglutinates are unknown; however, the conglutinates of closely allied species (*Fusconia*) are approximately 1 centimeter in length. When a fish eats a conglutinate, glochidia are exposed to and attach to the fish's gills.

Discharge of sheepnose conglutinates have been observed in Pennsylvania in late July (Ortmann 1911) and in the Mobile Basin, Alabama in August (Williams *et al*. 2008), but river temperatures were not given. Based on Ortmann 1911 and Williams *et al.*, 2008, it is assumed that Midwestern sheepnose would be summer spawners based upon spawning dates recorded in the latitudes located both south and north of the Corridor.

If glochidia successfully attach to a host fish, they mature into juvenile mussels which then drop off within a few weeks. If they land on suitable habitat, glochidia grow and mature into adult mussels. Using fish as hosts allows the sheepnose to move upstream and populate habitats it could not otherwise reach (USFWS 2013f).

2.2.1.3 Population Dynamics

As a group, mussels are long-lived, with individuals living up to several decades and sometimes up to 100 to 200 years. Sheepnose are reported to live as long as 30 years (USFWS 2013f).

2.2.2 Habitat

The sheepnose is found in large rivers such as the Mississippi, Wabash, and in some medium sized rivers such as the Kankakee. It is found in shallow areas with moderate to swift currents flowing over coarse sand and gravel. They have also been found in areas of mud, cobble and boulders, and in large rivers they may be found in deep runs. Adult sheepnose mussels spend their entire lives partially or completely buried in the river bottom (USFWS 2013f).

2.2.3 Species Status

2.2.3.1 Rangewide Status

During historical times, the sheepnose was fairly widespread in many Mississippi River system streams, although rarely very common. Archaeological evidence on relative abundance indicates that it has been an uncommon or even rare species in many streams

for centuries, and relatively common in only a few (Ohio River Valley Ecosystem Team 2002). The decline of the sheepnose in the Mississippi River system and other mussel species in the eastern United States is primarily the result of habitat loss and degradation. Habitat loss and degradation have been attributed to impoundments, channelization, chemical contaminants, mining, and sedimentation (Ohio River Valley Ecosystem Team 2002).

The sheepnose once occurred along the lower two-thirds of the Kankakee River. It has disappeared from the upper channelized portion of the Kankakee in Indiana, but persists in a localized portion of central Kankakee County, Illinois. Records since 1986 place the sheepnose from the vicinity of the Iroquois River confluence (Aroma Park) downstream to Kankakee, a distance of approximately 6 river miles (K.S. Cummings, INHS, pers. comm., 2001). Several live specimens have been sampled since 1996 from Aroma Park. The Kankakee population of sheepnose is very localized, small, and of questionable viability (Ohio River Valley Ecosystem Team 2002).

2.2.3.2 Critical Habitat

Critical habitat has not been designated for the sheepnose mussel.

2.3 Eastern Prairie Fringed Orchid

The eastern prairie fringed orchid is a 'characteristic prairie orchid' that occurs in wet to mesic black soil prairies, sand prairies, thickets, pot hole marshes, sedge meadows, fens, bogs, wet hay meadows, and moist abandoned fields (Swink and Wilhelm 1994). At one time, this species was common and hundreds of plants could be observed blooming in prairie habitat, particularly in the Chicago region (Sheviak and Bowles 1986). The eastern prairie fringed orchid has declined more than 70 percent from original county records in the United States due to habitat destruction, overgrazing, and habitat loss from encroachment by woody species (USFWS 1999a). As a result, the eastern prairie fringed orchid was listed as federally threatened by the USFWS on September 28, 1989; it has also been listed as threatened or endangered pursuant to State endangered species acts in Illinois, Iowa, Maine, Michigan, Ohio, Virginia, and Wisconsin (Center for Plant Conservation 2010c). According to the Eastern Prairie Fringed Orchid (*Platanthera leucophaea*) 5-year Review: Summary and Evaluation (USFWS 2010a), the distribution of the eastern prairie fringed orchid has not significantly changed since 1991.

2.3.1 Species Biology

2.3.1.1 Species Description

The eastern prairie fringed orchid was first collected in 1819 by Nuttall, near the confluence of the Kiamichi and Red Rivers in what is now known as Choctaw County, Oklahoma (Sheviak and Bowles 1986). Nuttall classified this species in the genus *Orchis* in 1834; it was then moved to the genus *Platanthera* by Lindley in 1835, a genus that was later termed *Habenaria* by Gray in 1867, and finally reclassified as *Platanthera* (USFWS 1999a).

Gleason and Cronquist (1991) classify the western prairie fringed orchid (*Platanthera praeclara*) as a variety of the eastern prairie fringed orchid. However, this classification does not take into account substantial differences in flower morphology, pollination mechanism, and geographic distribution between the two species (Sheviak and Bowles 1986; USFWS 1999a). Pollen is placed on the compound eyes of the moth that pollinates the western prairie fringed orchid, while pollen is placed on the proboscis of the moth that pollinates the eastern prairie fringed, thus this difference in flower morphology and pollination mechanism prevent hybridization of the two species (Sheviak and Bowles 1986; USFWS 1999a; Center for Plant Conservation 2010c).

The eastern prairie fringed orchid is an herbaceous, perennial monocot, with an upright, single leafy stem extending about 1 to 2 feet in height from an underground tuber (USWFS 1999a; Hilty 2012; Center for Plant Conservation 2010c).

It has alternate, light green leaves that sheath the stem, are 2 to 8 inches in length and about 1 to 1.5 inches wide (USWFS 1999a; Hilty 2012). The leaves are elliptical to lance-shaped, and progressively larger toward the stem base (USFWS 1999a). The lowest leaves clasp the stem, while the middle and upper leaves are sessile or have short petioles. They have smooth edges and texture, with faint parallel veins (Hilty 2012).

The slightly fragrant inflorescence extends from the central stem above the leaves, and is usually comprised of five to 40 creamy white flowers above lance-shaped bracts (USFWS 1999a). One or two smaller side stems may each produce racemes of flowers as well (Hilty 2012). The flowers are distinguished by a three-parted 1.5 to 3 centimeters long fringed lip and a 1 to 2 inch long nectar spur (USFWS 1999a; Hilty 2012). The tiny seeds of this species are wind dispersed and can travel a considerable distance (Hilty 2012).

Each flower consists of three greenish white sepals and three white petals (Hilty 2012). The upper sepal and two upper petals form a hood over the pollen and nectar-bearing organs of the flower (Hilty 2012). The lateral sepals are similar in shape, but spread outward (Hilty 2012).

Evidence suggests that the dense cluster of fleshy, tuberous roots of individual plants form a symbiotic relationship with endomycorrhizal bacteria (the fungus Rhyzoctonia) and are dependent on this symbiosis for their survival (Ulaszek and Glass 2001; Hilty 2012).

2.3.1.2 Life History

The eastern prairie fringed orchid is a perennial monocot that grows from an underground tuber, which develops a bud and the precursors of a flowering stalk during the growing season the year before flowering (USFWS 1999a). Because this species is initially dependent upon mycorrhizal associations, seedlings may not be visible aboveground during the earliest stages of development and mature plants have been known to be dormant for a growing season (USFWS 1999a).

A disturbance regime, such as fire, appears important for seedling establishment and flowering (Ulaszek and Glass 2001; USFWS 1999a). The stability of orchid populations is closely related to mycorrhizae, which may be in part affected by the increased mycorrhizal productivity that occurs after fire is introduced into the ecosystem (USFWS 1999a).

The mycorrhizal fungus *Ceratorhiza goodyerae-repentis* promotes seed germination of the eastern prairie fringed orchid and can prolong plant longevity (USFWS 2010a). In addition, photosynthesis in the eastern prairie fringed orchid is supplemented by mycrotrophy throughout adulthood by the following fungi; *C. goodyerae-repentis*, *C. pernacatena,* and *Epulorhiza* (USFWS 2010a).

Leaves and an immature flower cluster begin to emerge above ground in May following its first growing season, and subsequent flowering begins from late June to early July, lasting for 7 to 10 days (USFWS 1999a). Individual plants may be long-lived (up to 30 years), but some plants have been known to die as soon as the third year after initial flowering (USFWS 1999a).

Blossoms often rise just above the height of the surrounding vegetation to ensure exposure and increase the likelihood of pollination (USFWS 1999a). Night-flying hawkmoths (Lepidoptera: Sphingidae) pollinate the nocturnally fragrant flowers of the eastern prairie fringed orchid by inadvertently collecting pollen on their proboscises as they ingest nectar from the flower's long nectar spurs (USFWS 1999a). Apparently, vegetative reproduction is rare in this species (USFWS 1999a). Following pollination, seed capsules mature and produce thousands of miniscule, lightweight seeds that are dispersed by the wind from late August through September (USFWS 1999a).

Eastern prairie fringed orchid pollinators have been verified to be three hawkmoth species; Pandora sphinx moth (*Eumorpha pandorus*), achemon sphinx moth (*Eumorpha achemon*), and the hermit sphinx hawkmoth (*Sphinx eremitis*) (USFWS 2010a). However, researchers have also documented the Carolina sphinx (*Manduca sexta*) and the tersa sphinx (*Xylophanes tersa*) visiting the eastern prairie fringed orchid and/or carrying its pollinia (Crosson *et al*. 1999).

In Illinois, the hermit sphinx hawkmoth is confirmed as a pollinator of this species (Pollack 2009). However, the other two hawkmoth species that pollinate this orchid are also found in Illinois (USFWS 2012b). Data is not available for confirmed pollinators of this species in Indiana. Caterpillars of the hermit sphinx hawkmoth host on various species of beebalm (*Monarda* spp.), mints (*Mentha* spp.), bugleweed (*Lycopus* spp.) and sage (*Salvia* spp.) (USFWS 2012b). Eastern prairie fringed orchid flowers are morphologically adapted to sexually reproduce; however, plants appear to be self-compatible and are likely self-pollinated in small populations where pollinators revisit flowers (Center for Plant Conservation 2010c; Bowles 1985).

Establishment of seedlings and colonization appears to be dependent upon the presence of early-successional vegetative community stages and a mosaic of disturbance where competition from other plant species has been reduced (Sheviak 1974; Pavlovic 1994;

USFWS 1999a). However, it should be noted that although the eastern prairie fringed orchid appears to thrive on seasonal disturbances such as fire and grazing, this species is truly only tolerant of these disturbances while dormant, i.e., growing season damage to vegetative material may be harmful to this species (USFWS 1999a).

2.3.1.3 Population Dynamics

In some instances, the eastern prairie fringed orchid can live for decades. Cases reporting this type of longevity have included individual plants surviving in gardens for up to 30 years, as well as in cemetery prairies where annual mowing prevented seed production for decades (USFWS 1999a). However, dramatic variations in the number of individuals within natural populations often occur (USFWS 1999a).

When patterns of large-scale disturbance are present, eastern prairie fringed orchid populations tend to experience high population turnover, decline, or total loss (USFWS 1999). The continual re-establishment or recolonization of successional habitats appears to be critical for orchid population persistence (USFWS 1999a). This is dependent upon prolific seed output and dispersal, which is in turn reliant upon pollinator visitation and the presence of appropriate mycorrhizae (USFWS 1999a).

2.3.2 Habitat

The eastern prairie fringed orchid occurs in neutral to mildly calcareous, tallgrass silt-loam or sand prairies, sedge meadows, marsh edges, fens, lakeshore grasslands, and occasionally sphagnum bogs in the eastern part of its range (Center for Plant Conservation 2010c; USFWS 1999a). Natural processes that maintain habitats in early or mid-successional phases are important in providing the sunny, open conditions required for optimum growth and reproduction by the orchid (USFWS 1999a; Center for Plant Conservation 2010c; Sheviak 1974).

The eastern prairie fringed orchid thrives in broad moisture gradients (USFWS 1999a). Most populations within the Midwest are found in level mesic prairie or in wet prairie along borders of prairie potholes and watercourses, and in silt-loam soils derived from loess or glacial till (USFWS 1999a). The eastern prairie fringed orchid is also infrequently found in upland areas, such as along ridges created by glacial deposits (USFWS 1999a).

The eastern prairie fringed orchid is tolerant of a wide range of soil pH conditions; ranging from tallgrass silt loam and sand prairie soils that are usually calcareous, with pH levels of 6-7.5, to acidic lake borders, fens, sedge meadows, and marshes in the eastern parts of its range, with pH levels ranging from 5.3-6.5 (Center for Plant Conservation 2010c).

Based on the USFWS Section 7 Technical Assistance guidelines for determining the presence of the eastern prairie fringed in Illinois, Table 2-1 depicts the associate species of the orchid.

Table 2-1. Eastern Prairie Fringed Orchid Associate Species

Species Genus	Common Name
Andropogon gerardii	Big bluestem
Apocynum sibiricum	Prairie Indian hemp
Aster ericoides	Heath aster
Aster novae-angliae	New England aster
Aster simplex	Panicled aster
Carex stricta	Tussock sedge
Carex spp.	Sedge species
Calamagrostis canadensis	Blue joint grass
Cassia fasciculata	Partridge pea
Eupatorium perfoliatum	Common boneset
Galium obtusum	Wild madder
Gentiana puberulenta	Prairie gentian
Helianthus grosseserratus	Sawtooth sunflower
Iris virginica shrevei	Blueflag iris
Liatris aspera	Rough blazing star
Liatris spicata	Marsh blazing star /gayfeather
Lycopus americanus	Common water horehound
Mentha arvensis villosa	Wild mint
Pycnanthemum virginiana	Common mountain mint
Solidago gigantea	Late goldenrod
Solidago graminifolia nuttallii	Hairy grass-leaved goldenrod
Sorghastrum nutans	Indian grass
Tradescantia ohiensis	Common spiderwort

Source: (USFWS 2013h).

2.3.3 Species Status

2.3.3.1 Rangewide Status

The eastern prairie fringed orchid formerly ranged from Nova Scotia, southern Ontario, and Ohio west into southern Michigan, northern Indiana, and into a narrow peninsula across southern Wisconsin, northern and central Illinois, southeastern Iowa, and eastern Oklahoma (Gleason and Cronquist 1991; USFWS 1999a; Center for Plant Conservation 2010c). Orchid populations also occurred in northwestern Pennsylvania, western New York, New Jersey, Virginia, and Maine (USFWS 1999a).

The USFWS *Recovery Plan for the Eastern Prairie Fringed Orchid* (USFWS 1999a) lists 59 known populations in six states, which are largely found within Wisconsin, Illinois, Michigan, and Ohio. At the time of the USFWS *Recovery Plan for the Eastern Prairie*

Fringed Orchid (USFWS 1999a) publication, 22 of the 59 populations were located in Illinois. A 2008, a range-wide population viability assessment for the eastern prairie fringed orchid concluded the discovery of 17 additional populations of this species, bringing the total number of known populations to 76 (USFWS 2010a).

Historic records are known from at least 33 counties in Illinois, although this species is now present within only nine counties, perhaps with less than 25 extant populations remaining (Herkert 1991; Ulaszek and Glass 2001). Nearly all the remaining populations in Illinois are on protected land, which are actively managed in an attempt to either enhance existing populations or establish new populations at suitable locations (Ulaszek and Glass 2001).

Fifteen populations located in the US have full legal protection and only 11 populations are relatively free of serious management problems (USFWS 1999a). At the time of its listing, eastern prairie fringed orchid populations in New York, Pennsylvania, New Jersey, Indiana, Oklahoma, and Virginia were either extirpated or could not be found (USFWS 1999a).

Demographic data collected in Illinois is used to track seed production from natural pollination and hand pollination to provide information about population augmentation for seed collection to be used for reintroduction (USFWS 2010a). As a result of these efforts, seven populations have been reintroduced in Illinois (USFWS 2010a).

2.3.3.2 Critical Habitat

Critical habitat has not been designated for the eastern prairie fringed orchid.

2.4 Indiana Bat

The Indiana bat is a small bat that hibernates during winter in caves or, occasionally, in abandoned mines. During summer they roost under the peeling bark of dead and dying trees. Indiana bats eat a variety of flying insects found along rivers or lakes and in uplands. Indiana bats are found over most of the eastern half of the United States. Almost half of them hibernate in caves in southern Indiana (USFWS, 2013).

Indiana bats are extremely vulnerable to disturbance as they hibernate in large numbers in only a few caves. The commercialization of caves – allowing visitors to tour caves during hibernation – drives bats away. Indiana bats use trees as roosting and foraging sites during summer months. Loss and fragmentation of forested habitats can affect bat populations. In addition, white nose syndrome (WNS), a fungus, is an illness that has killed over a million bats, including the Indiana bat, since 2006 (USFWS 2013d)

2.4.1 Species Biology

The Indiana bat is relatively small, weighing only one-quarter of an ounce and has a wingspan of 9 to 11 inches (USFWS 2013d). They are nondescript, dull dark brown or grayish-brown. The species is distinguished from the similar *Myotis lucifugus*, which is common near the survey area, by the presence of a keel on the calcar, hairs on the toes

and foot not extending beyond the tip of the claws, and dull rather than glossy fur (Hoffmeister 1989).

2.4.1.1 Life History

Indiana bats hibernate for the winter, generally October through April (LaVal and LaVal 1980), in a limited number of caves or mines with very specific temperature and humidity conditions. Upon arriving at the caves in August or September, bats swarm each evening for a period of up to several weeks. Mating occurs during this time. Males are mature in their second year, females in their first autumn (USFWS 1999).

Dispersal occurs in the spring, with females emerging first. Some individuals migrate considerable distances. In Illinois, females reach summer habitat beginning in mid-April (Gardner *et al*. 1991a) and possibly into mid-May. The female gives birth to a single young.

Maternity colonies usually contain less than 100 bats (USFWS 1999). Roosts are established under the exfoliating bark of dead or, in some cases, living trees. Young Indiana bats are able to fly about a month after birth, usually by mid to late July (Clark *et al*. 1987) or early August (Gardner *et al*. 1991a; Brack 1983).

Indiana bats forage on a wide variety of flying insects; the composition of the diet varies depending on location, season, and individual condition (USFWS 1999).

2.4.1.2 Population Dynamics

Indiana bat population size has dropped dramatically over the past 40 years (Kurta and Kennedy 2002); much of the decline which took place from the 1960s through the 1980s has been attributed to human disturbance of hibernating caves, including vandalism and intentional modification of cave entrances. However, recent declines are less well understood (USFWS 1999).

Natural factors including flooding and cave collapse, sometimes aggravated or induced by off-site disturbances, and unusually cold weather, have also affected some populations (USFWS 1999). In addition, WNS, a fungus, is an illness that has contributed to the decline of the Indiana bat (USFWS 2013d). In 2013, the Illinois DNR indicated that WNS has been detected in LaSalle County in north-central Illinois, Monroe County in southwestern Illinois, and Hardin and Pope Counties in extreme southern Illinois. As of 2013, WNS has been reported within a cave located in southern Indiana as well as in north-central Indiana (Pennsylvania Game Council, 2013). The nearest known hibernaculum to the Illiana Corridor is located in LaSalle County (IDNR 2013e).

The total Indiana bat population was estimated at 353,000 individuals in 1997 (USFWS 1999) and 387,000 individuals in 2009 (USFWS 2013d). Population estimates have greatly decreased for Kentucky and Missouri since the first surveys in 1960, but estimated numbers have increased for Indiana and a few other states. Estimated Illinois population sizes have been 4,140 (1960), 3,990 (1980) and 4,530 (1995-97) (USFWS 1999).

Hibernating population estimates were first completed in Indiana in 1981 resulting in 151,676 hibernating bats. Estimated Indiana population sizes have been, 104,680 (1985), 238,009 (2007), and 215,277 (2009). In 2009, Indiana's 37 hibernacula harbored approximately 52 percent of the range-wide population of Indiana bats and approximately 76 percent of the Midwest Recovery Unit population (USFWS 2011).

Because Indiana bats congregate in such large numbers to hibernate, they are subject to occasional catastrophic events, both natural and human induced, capable of decimating regional populations. Relatively low fecundity limits the potential recovery rate.

2.4.2 Habitat

Hibernating caves or mines maintain a narrow temperature range, optimally 3 to 6 degrees Centigrade, during mid-winter in the areas utilized by bats. Hibernating sites have a low risk of freezing, but are also unlikely to rise above levels that might raise metabolism enough to exhaust fat reserves before the end of winter. Humidity is usually above 74 percent at hibernating sites, although exceptions are known (Humphrey 1978). Relatively few caves or mines maintain low and stable temperatures within the suitable range.

Summer habitat is somewhat less well understood. Floodplain and upland forest are used for roosting, with foraging occurring in these communities and in nearby old fields and pastures with scattered trees (Gardner *et al*. 1991b; Callahan *et al*. 1997). Dead or dying trees, or living trees with loose or exfoliating bark, are used for roosts. Certain kinds of disturbance (damage from hogs, mine subsidence) can actually create habitat by killing mature trees, and this may be important in areas which consist largely of even-age stands.

It has been suggested that the Indiana bat may be a savanna species, especially in the western part of the range, and this may help to explain the apparent tolerance of fragmented forest landscapes (USFWS 1999).

A wide variety of tree species are used for roosting, as long as the appropriate structure of loose, exfoliating bark is present (Gardner *et al*. 1991a; Callahan *et al*. 1997). Roost trees tend to be large and isolated or located at the edge of woodlots, and in areas with an open canopy and understory (USFWS 1999). Maternity colonies use one to three primary roost trees, with a number of alternate roost trees (up to 17) nearby. Choice of roost trees may be influenced at least in part by thermoregulation needs (USFWS 1999; Callahan *et al*. 1997).

Trees with exfoliating bark are an ephemeral resource, with dead trees maintaining suitable conditions for not more than a few years. A few tree species, including slippery elm, cottonwood, green ash, certain oaks, and hickories, may provide useful habitat for 4 to 8 years (Gardner *et al*. 1991a; Callahan *et al*. 1997; USFWS 1999). Indiana bats return to the same roosting areas over time, with females sometimes returning to the same tree in subsequent years (Humphrey *et al*. 1977). Good habitat includes a number of roost trees within the maternity colony vicinity (Kurta *et al*. 1993; Callahan *et al*. 1997), thus

allowing bats to move among trees in response to changing weather conditions or loss of individual trees.

Foraging occurs along riparian forest, and to a lesser extent among open canopy of upland forest or in early successional fields, along wooded fencerows, or over farm ponds (Clark *et al*. 1987; Gardner *et al*. 1991b). Cope *et al*. (1987) identified wooded riparian corridors of at least 30 meters (98.4 feet) width on each side of a stream as preferred foraging habitat. Foraging areas may be up to 2.5 kilometers (1.55 miles) from upland roosts (Gardner *et al*. 1991b). Areas of riparian forest 0.8 to 1.2 kilometers (0.5 to 0.75 miles) in length are used for foraging (Humphrey *et al*. 1977; Cope *et al*. 1978; Gardner *et al*. 1991b).

2.4.3 Species Status

2.4.3.1 Rangewide Status

The Indiana bat occurs through much of the lower Midwestern and northeastern United States; however, winter habitat (hibernating caves) is limited to a few states, with as much as half the population wintering in Indiana. Eighty-five percent of the population winters in nine Priority One[1] caves, three each in Indiana, Kentucky, and Missouri. The rangewide population estimate declined approximately 57 percent from 1965 to 2001 (USFWS 2007a); however, recent rangewide estimates of species numbers from three most recent biennial survey periods do not show the same declining trend (USFWS 2007a).

Garner and Gardner (1992) summarized the Illinois distribution of the Indiana bat, based on their own work and a review of earlier literature. Counties where reproductive females or juveniles had been reported up to that time included Adams, Bond, Jackson, Johnson, Perry, Pike, Pulaski, Schuyler, Scott, Union, and Wabash/Edwards. Garner and Gardner (1992) sampled 190 sites in 75 Illinois counties and documented the presence of Indiana bats at 48 sites (25.3 percent), including new records for 13 counties. All but three of these (Vermilion, Ford, and Henderson) were in southern Illinois.

In 2005, over 90 percent of the estimated rangewide population hibernated in just five states, including 45.2 percent in Indiana and 9.7 percent in Illinois (USFWS 2007a). In Illinois, six Priority Two[2] hibernacula are present in Jackson, LaSalle, and Monroe Counties (USFWS 2007a). Seven Priority Three[3] hibernacula are known in Adams, Alexander, Jo Daviess, Johnson, Madison, Pike, Pope, and Union counties (USFWS

[1] Priority One hibernacula are those that consistently have greater than 30,000 Indiana bats hibernating inside each winter.

[2] Priority 2 hibernacula contributes to recovery and long-term conservation of the Indiana bat and have a current or observed historic population of 1,000 or greater but fewer than 10,000 and an appropriate microclimate (USFWS, 2007a).

[3] Priority 3 hibernacula contribute less to recovery and long-term conservation of the Indiana bat and current or observed historic populations of 50-1,000 bats (USFWS, 2007a).

2007a). In Indiana, there are seven Priority One[4] hibernacula and one Priority Two hibernacula (USFWS 2007a). The *Indiana Bat (Myotis sodalis) Draft Recovery Plan: First Revision* (USFWS 2007a) depicts the distribution of counties with known summer and winter records and depicts the distribution of counties with known Indiana bat hibernacula. As of 2007, Priority One hibernacula within Indiana indicate an increasing population pattern at five of the seven hibernacula (USFWS 2007a). However, as of 2013, WNS has resulted in the unprecedented mortality of bat species. Since its first documented appearance in New York in 2006, WNS has spread rapidly throughout the Northeast and is expanding through the Midwest (USFWS 2013k). USFWS biologists and partners estimate that 5.7 million to 6.7 million bats of several species have died from WNS (USFWS 2013k).

Indiana bat population estimates based on winter surveys conducted in January and February of 2011 at known Priority 1 and 2 hibernacula indicate an increase in population size throughout the species' range (USFWS 2012e). The USFWS considers these population estimates to be the best available data for this species. However, it is acknowledged that some of these data contain an undeterminable, but potentially substantial and variable degree of error from one year to the next (USFWS 2012e).

The Indiana bat was listed as endangered on March 11, 1967, and it has retained that status because of a continued and accelerated decline in total numbers, especially in certain parts of the range.

2.4.3.2 Critical Habitat

Critical habitat has been designated for the Indiana bat; however, the proposed action will not affect designated critical habitat. The nearest designated critical habitat for this species is located in LaSalle County, Illinois, approximately 44 miles from the Corridor.

2.5 Eryngium Stem Borer Moth

The Eryngium stem borer moth (also known as the rattlesnake-master borer moth) was pronounced a candidate species for federal listing. On August 14, 2013 (USFWS 2013j), the USFWS published a 12-month petition finding, determining that listing the Eryngium stem borer moth as threatened or endangered was warranted but precluded by higher priority listing actions. The moth was given a relatively low listing priority number (LPN) of 8 on a scale of 1 to 12, based on the immediacy and magnitude of threats, among other factors. The moth was added to the candidate species list and the development of a proposed rule to list the Eryngium stem borer moth will occur as USFWS priorities allow (USFWS 2013j).

The Illinois Natural Heritage Program ranks this species as G2/S1, which means the Eryngium stem borer moth is critically imperiled globally and in Illinois (USFWS 2003, Illinois Natural Heritage Database 1999). The Eryngium stem borer moth has been

[4] Essential to recovery and long-term conservation of the Indiana bat and typically has (1) a current and/or historically observed winter population ≥ 10,000 Indiana bats and (2) currently has suitable and stable microclimates.

extirpated in much of its historic range and is rare throughout its current range (USFWS 2003). Reasons for this decline are a loss of prairie habitat.

2.5.1 Species Biology

2.5.1.1 Species Description

The Eryngium stem borer moth is a member of the family Noctuidae (owlet moths) and was first described from specimens collected near Chicago, Illinois in 1917 (Bird 1917). The genus *Papaipema* includes 53 species, all of which are found in North America and are root or stem boring (Schweitzer *et al.* 2011; Panzer 1998).

The Eryngium stem borer is a large, dark reddish-purplish moth with prominent white spots, which look similar, but a bit larger than the white spots of most specimens of the umbellifer borer moth (*Papaipema birdi*) (Forbes 1954). The forewing of this moth is rich purple brown to red brown becoming lighter and showing yellow powderings near the inner margin, a yellowish white dot at the base, and a powdery yellow patch at the apex (Bird 1917). The hind wing is duller than the forewing (Bird 1917). Larvae within the *Papaipema* genus have a pattern of longitudinal white stripes and can be placed into one of four groups based on stripe configurations within the thoracic region (Panzer and Bess 1997). The Eryngium stem borer moth is a member of this group with zero stripes (USFWS 2013j).

The adult Eryngium stem borer can grow from 1.3 to 1.8 inches (3.5–4.8 centimeters) (Bird 1917). It has a smooth head with simple antennae and a tufted body that often slants forward and is truncate at the distal end (Forbes 1954; Bird 1917; Panzer and Bess 1997). Male Eryngium stem borer moths have distinctively identifiable genitalia, which allow distinction from other moths within this genus of similar appearance (Forbes 1954; Bird 1917).

2.5.1.2 Life History

Eryngium stem borer moths have a single flight. Adults emerge between mid-September and mid-October, and fly until mid to late October or until the weather becomes too cold (USFWS 2013j; Hessel 1954; Forbes 1954; Bird 1917).

Due to their nocturnal habits, little is known about Eryngium stem borer adult feeding habits (USWFS 2013j). Based on their short adult flight span, their underdeveloped mouth parts, and the amount of stored fat observed in this species, researchers postulate that Eryngium stem borer moths do not require a great amount of nectar and rather use dew or oozing sap for imbibing moisture (USFWS 2013j). Adult moths drink from sugar water when in captivity (USFWS 2013j).

In mid-October, females lay eggs in the vicinity of the host plant, the rattlesnake master, where the eggs overwinter in the duff of this plant (USFWS 2013j). The larvae then emerge from mid-May to early June (USFWS 2013j; Bird 1917). When larvae first emerge, they feed on the leaves of the host plant and the second instars burrow into the stem (or root) where they remain until they pupate from mid to late August (USFWS 2013j; Bird 1917). Eryngium stem borer moths have only one food source, the larvae

feed exclusively on rattlesnake master (USFWS 2013j; Hessel 1954; Forbes 1954; Bird 1917).

Researchers have observed cannibalistic behavior within this species during the larval stage, wherein some caterpillars attempting to bore into already occupied bore holes, kill the existing occupant (USFWS 2013j).

Eryngium stem borer moths diapause in the chamber they create within the host plant and pupation takes place, over 2 to 3 weeks, either inside the chamber or in the soil (USFWS 2013j; Bird 1917). The boring activities of the moth can result in a decline of flowering and sometimes kill the host plant (USFWS 2013j).

Eryngium stem borer moths are not thought to disperse widely and have been described as ''relatively sedentary'' (USFWS 2013j). Based on their coloring, researchers believe the moths likely spend their days attached to plants or on the bottom of leaves, where their presence is camouflaged (USFWS 2013j). Panzer found that female rattlesnake-master borer moths dispersed up to 394 feet (120 meters) from the point of release and some traversed an 82-foot (25-meter) gap devoid of host plants (USFWS 2013j). Other researches indicate that Eryngium stem borer moths will disperse up to 2 miles (3–6 kilometers) if the number of host plants is limiting (USFWS 2013j).

2.5.1.3 Population Dynamics

Eryngium stem borer moths life span is approximately 1 year. They lay their eggs in October. The eggs overwinter and emerge in May or June of the following year (USFWS 2013j). The larvae then burrows into the stem (or root) of the rattlesnake master where they remain until they pupate from mid to late August (USFWS 2013j). Adults emerge between mid-September and mid-October, and fly until mid to late October or until the weather becomes too cold (USFWS 2013j; Hessel 1954; Forbes 1954; Bird 1917).

2.5.2 Habitat

Eryngium stem borer moths are obligate residents of moderately disturbed and somewhat undisturbed mesic and wet prairies and woodland openings that contain their only food plant, the rattlesnake master (USFWS 2013j). Although common in remnant prairies, rattlesnake-master occurs in low densities; it is a conservative species and has been found to have relative frequencies in restored and relict prairies of less than 1 percent (USFWS 2013j).

The range of rattlesnake master covers much of the eastern US and spans from Minnesota south to Texas, east to Florida and back north to Connecticut (USFWS 2013j). Although the plant has an expansive range, the loss of its tallgrass prairie habitat within that area is estimated to be between 82-99 percent (USFWS 2013j). Most moderate to high-quality prairies that remain are small and scattered across the landscape (USFWS 2013j; Robertson *et al.,* 1997).

2.5.3 Species Status

2.5.3.1 Rangewide Status

The Eryngium stem borer moth is currently known to occur in five states: Illinois, Arkansas, Kentucky, North Carolina, and Oklahoma (USFWS 2013j). Given that its host plant ranges across 26 States (USFWS 2013j), it is likely the Eryngium stem borer moth's historic range was larger than at present. There are no historical records and no known records of Eryngium stem borer moth in Indiana, although surveys have been conducted at several sites where the host plant occurs (USFWS 2013j). In Missouri, experts have examined numerous *Papaipema* specimens without finding any collections of Eryngium stem borer moth (USFWS 2013j). Experts indicate that, given the abundance of the host plant in Missouri, the species possibly occurs in Missouri and has not been detected (USFWS 2013j). There are also no historical or known records for Iowa (USFWS 2013j).

Specific occurrence information for Illinois, where the species is currently known to occur, is presented below.

Illinois

Illinois has the most Eryngium stem borer moth sites of the other states in which this species is known to occur (USFWS 2013j). At this time, there are ten known populations of Eryngium stem borer moth within eight counties. Table 2-2 summarizes the ten Eryngium stem borer moth populations located in Illinois.

Table 2-2. Known Populations of Eryngium Stem Borer Moths in Illinois

County	Site Description and/or Property Owner*	Population Status
Cook	Northeastern Illinois University	Extant/Introduced
Grundy	Railroad siding	Extant
Grundy	Illinois DNR	Extant
Livingston	Railroad siding	Extant
Kankakee	Railroad siding	Extant
Marion	Illinois DNR	Extant
Marion	Illinois DNR	Extant
Marion/Effingham/Fayette	Railroad Siding	Extant
Will	Illinois DNR	Extant/stable
Will	Railroad siding, private	Unknown

Source: (USFWS 2013j).

* Because poachers have removed individuals from these population, the location of these sites are undisclosed.

Larval surveys were conducted at the Will County railroad siding site, with presence last confirmed in 1997 (Illinois Natural Heritage Database 2012). This site was described by researchers as being small and with few host plants (USFWS 2013j). The population of Eryngium stem borer moths on this site is under private ownership of the railroad; however, it is contiguous with an Illinois State Nature Preserve (USFWS 2013j). During a subsequent larval survey at this site in 2008, signs of Eryngium stem borer moths were not observed (USFWS 2013j). Based on this information, the status of the species at this site is considered to be unknown.

2.5.3.2 Critical Habitat

Critical habitat has not been designated for the Eryngium stem borer moth.

2.6 Northern Long-Eared Bat

The USFWS proposed to list the northern long-eared bat as an endangered species throughout its range on October 2, 2013 (78 FR 61046). Critical habitat for this species has not been proposed.

The northern long-eared bat is a medium sized bat that hibernates during winter in caves, in abandoned mines, and occasionally in other types of habitat that resemble cave or mine hibernacula (USFWS 2013k). During the summer, the northern long-eared bats typically roost underneath tree bark or in cavities or crevices of both live trees and snags (USFWS 2013k).

The primary threat to the northern long-eared bat is white-nose syndrome. This species naturally occurs in small populations, making it particularly vulnerable to mass mortality events like white-nose syndrome. Other sources of mortality include wind-energy development, habitat modification, destruction and disturbance, effects of climate change, and contaminants (78 FR 61046). Although no significant decline due to these factors has been observed, they may have aggregate effects to the species in addition to white-nose syndrome (78 FR 61046).

2.6.1 Species Biology

2.6.1.1 Species Description

The northern long-eared bat is a member of the order Chiroptera, family Vespertilionidae, genus, *Myotis.* Other common names for this species include northern myotis or northern bat. The northern long-eared bat was formerly considered a subspecies of the eastern long-eared bat (*Myotis keenii*), though recent data indicates that the two species are genetically distinct (USFWS 2013k; Caceres and Pybus 1997).

The northern long-eared bat is a medium-sized bat and as its name suggests, is distinguishable from other *Myotis* species by its long ears, which extend beyond its nose when pushed forward (average length 0.6 inch, USFWS 2013k; Whitaker and Mumford 2009). Females within this species tend to be slightly larger and heavier than males (USFWS 2013k; Caceres and Pybus 1997). Their tragus, small pointed eminence of the external ear, is long and pointed, and often somewhat curved (USFWS 2013k;

Whitaker and Mumford 2009). Northern long-eared bats' dorsal pelage is a dullish yellow-brown with brown shoulder spots, and ventral pelage is pale gray.

2.6.1.2 Life History

Northern long-eared bats hibernate for the winter, generally from late summer/early fall to spring (Caire *et al*. 1979). In Missouri, hibernation has been reported from October to late March, with numbers of individuals captured at cave entrances beginning to decline significantly in September (Caire *et al*. 1979). In Indiana, northern long-eared bats have been documented outside of hibernation sites periodically throughout winter, especially in mild weather (Whitaker and Rissler 1992). In summer, an activity peak generally occurs 1 to 2 hours after sunset, with a secondary peak 7 to 8 hours after sunset (Kunz 1973).

Though some may roost alone, females often roost colonially; maternity or nursery colonies may be comprised of up to 90 individuals (including young, Layne 1978). Males and non-reproductive females generally roost singly during the summer months (Caceres and Pybus 1997). As many as 60 adults have been found in a single tree (Foster and Kurta 1999).

Mating takes places in late summer and early fall, during the swarming period when large numbers of bats congregate in and near certain caves (Center for Biological Diversity [CBD] 2010; Baker 1983, Kurta 1980). Females store sperm during hibernation, though some may copulate again at spring emergence (Racey 1982). Researchers found a portion of the males of some species to be reproductively active in late winter and early spring. However, males emerging from hibernation in Missouri were found to be reproductively inactive until late July, with the largest percentage of males becoming reproductively active in August and September (CDB 2010; Caire *et al*. 1979).

Females ovulate at the time of emergence and bear a single offspring 50 to 60 days later (CBD 2010; Baker 1983). Females have been documented to give birth in early to late June in Indiana (CBD 2010), and in late June to early July in Iowa, Illinois, Michigan, and New York (CBD 2010). Nursery colonies are relatively small, most often including two to 30 adults (CBD 2010).

Information on migration of this species is sparse. It has been reported that the winter and summer geographic ranges of the species appear to be identical However, the lack of hibernacula and nursing females in some areas indicates that significant portions of the population may move seasonally. Swarming behavior in late summer indicates that there is some degree of local or regional movement prior to reproduction (Barbour and Davis).

Some observations indicate that the northern long-eared bat species is capable of traversing relatively long distances, often in a short period of time (Caire *et al*. 1979). One recaptured male traveled at least 34 miles in 1 month, from its cave of origin to its apparent summering area (Caire *et al*. 1979). One individual was also reported to have flown approximately 60 miles between two caves (Griffin 1945).

The northern long-eared bat is an opportunistic insectivore (Kunz 1973); prey composition varies widely among sites and seasons; diet includes moths, butterflies, beetles, net-winged insects, flies, ants, bees, sawflies and true bugs, among other insects (Whitaker and Rissler 1992).

2.6.1.3 Population Dynamics

Northern long-eared bats are polygynandrous. Mating occurs in autumn when groups of a few hundred are formed and pairs copulate before going into hibernation (Trouessart 1999).

The females store sperm in their uteri during hibernation; ovulation will not occur until they emerge in the spring. Gestation lasts 50 to 60 days, after which a single young is born. The average weaning age for the northern long-eared bat is 30 days (Trouessart 1999). Individuals of this species have been known to live up to 18.5 years (Bogan and Valdez 2000).

2.6.2 Habitat

The northern long-eared bat hibernates during winter in caves, in abandoned mines, and occasionally in other types of habitat that resemble cave or mine hibernacula, including abandoned railroad tunnels (USFWS 2013k). Also, northern long-eared bats have been found hibernating near the entrance of a storm sewer in central Minnesota, in a hydro-electric dam facility in Michigan, and in an aqueduct and a dry well in Massachusetts (USFWS 2013k).

During the summer, northern long-eared bats typically roost singly or in colonies underneath bark or in cavities or crevices of both live trees and snags (USFWS 2013k). Males and non-reproductive females' summer roost sites may also include cooler locations, including caves and mines (USFWS 2013k). Northern long-eared bats have also been observed roosting in colonies in structures, such as buildings, barns, a park pavilion, sheds, cabins, under eaves of buildings, behind window shutters, and in bat houses (USFWS 2013k).

The northern long-eared bat appears to be somewhat opportunistic in tree roost selection, selecting varying roost tree species and types of roosts throughout its range, including tree species such as black oak (*Quercus velutina*), red oak (*Quercus rubra*), silver maple (*Acer saccharinum*), black locust (*Robinia pseudoacacia*), American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), sourwood (*Oxydendrum arboreum*), and shortleaf pine (*Pinus echinata*) (USFWS 2013k). It is likely that northern long-eared bats are not dependent on specific species of trees for roosts; rather, trees with suitable cavities and/or sloughing bark are utilized by the bats opportunistically (USFWS 2013k). Researchers speculate that structural complexity of habitat or available roosting resources are more important than the actual species of tree (USFWS 2013k). In tree roosts, northern long-eared bats are typically found beneath loose bark or within cavities and have been found to use both exfoliating bark and crevices to a similar degree for summer roosting habitat.

Forest canopy coverage at northern long-eared bat roosts has been documented as 56 percent in Missouri, greater than 75 percent in New Hampshire, to greater than 84 percent in Kentucky (USFWS 2013k). Females tend to roost in more open areas than males, likely due to increased solar radiation, which supports pup development (USFWS 2013k). Fewer trees surrounding maternity roosts may also benefit juvenile bats that are learning to fly (USFWS 2013k).

Female northern long-eared bats typically roost in tall trees with a large diameter (USFWS 2013k). Studies have found that the diameter-at-breast height (DBH) of northern long-eared bat roost trees was greater than random trees (USFWS 2013k) and others have found both DBH and height of selected roost trees to be greater than random trees (USFWS 2013k). However, other studies have found that roost tree mean DBH and height did not differ from random trees (USFWS 2013k).

2.6.3 Species Status

2.6.3.1 Rangewide Status

The northern long-eared bat ranges widely across the US, but is patchily distributed and rarely found in large numbers (CBD 2010). It occurs in eastern, Midwestern, and some southern states (CBD 2010). This species is found in both Illinois and Indiana. Thirty-six (36) known hibernacula and 25 known hibernacula for the northern long-eared bat are located in Illinois and Indiana, respectively (USFWS 2013k).

The northern long-eared bat is considered fairly common throughout much of the Midwest (USFWS 2013k). However, the species is often found infrequently and in small numbers in hibernacula surveys throughout most of the Midwest (USFWS 2013k). Historically, the northern long eared bat was considered quite common throughout much of Indiana and has been captured in at least 51 counties and is often captured in mist-nets (USFWS 2013k).

Data about the specific locations of hibernacula for the northern long-earned bat within Illinois and Indiana is limited. There are no known caves or mines in the Action Area or the Corridor. Therefore, it is assumed that overwintering of northern long-eared bats does not occur within the action area.

2.6.3.2 Critical Habitat

Critical habitat has not been proposed for the northern long-eared bat.

3.0 Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.

3.1 Eastern Massasauga

3.1.1 Survey Methods

Visual Encounter Surveys were conducted at four locations in Illinois and within areas of potential habitat in Indiana within the project survey area (INHS 2013c; Cardno JFNew 2013a; see Appendix I). Surveys involved searching suitable habitat and turning over objects such as logs, rocks, and debris, while scanning open habitat areas for the target species (Heyer et al. 1994). Cardno JFNew followed standard survey protocols developed by Casper et al. (2001). The INHS following standard survey protocols developed by Heyer et al. (1994). Both survey methodologies are preferred by the USFWS.

An examination of satellite images of the project survey area in Illinois did not indicate the presence of prime habitat for the eastern massasauga (INHS 2013a; see Appendix G). Thus, the majority of herpetological surveys in Illinois occurred between I-55 to the north/east shore of the Kankakee River from May 22 to May 24, 2012 (INHS 2013a). See Figure 3 in Appendix A which depicts areas sampled for the eastern massasauga in Illinois. Surveys in Indiana were conducted during spring emergence on April 29 and 30, 2013, and included timed visual inspection pedestrian surveys through suitable habitat (marshes, lake margins, and adjacent uplands) (Cardno JFNew 2013a).

3.1.2 Survey Results

Based on the surveys, the eastern massasauga was not detected within the Corridor (INHS 2013a; Cardno JFNew 2013a). Suitable habitat for the eastern massasauga was not identified within the Corridor in Illinois; however, habitat for this species is present within the Corridor in Indiana (INHS 2013a; Cardno JFNew 2013a). Habitat for the eastern massasauga is shown on Figure 3 in Appendix A.

3.1.3 Status Within the Action Area

One known population of eastern massasauga is located approximately 4.3 miles from the Corridor within the Goodenow Grove Nature Preserve, which is part of the Forest Preserve District of Will County Plum Creek preserve system. There have been no live records from Goodenow Grove since 1996 despite 622 search hours at the site (INHS 2013a). Although one road killed individual was found in 1999, the population is inferred to be extirpated (INHS 2013a; INHS 2006).

The western terminus of the Corridor traverses the Midewin-Des Plaines-Goose Lake Prairie, a COA, as described in Section 1.2. The impacts to the natural resources within

this COA are likely to be minimal since the alignment avoids MNTP, which harbors the majority of natural habitat within the COA. Information provided by MNTP indicates that the eastern massasauga rattlesnake is not present within this unit, although suitable habitat is present.

3.1.4 Factors Affecting the Species Environment Within Action Area

Threats to the eastern massasauga include intentional killing due to human fear of venomous snakes and habitat loss (USFWS 2013a). Draining wetlands for farms, roads, homes, and urban development has eliminated much of the massasauga habitat. Also, massasaugas are not long distance travelers, so roads, towns, and farm fields prevent them from moving between the wetland and upland habitats. These same barriers also separate and isolate remaining populations from each other. Small, isolated populations often continue on a downward spiral until the eastern massasauga is lost from those areas (USFWS 2013a).

One known population of eastern massasauga is located approximately 4.3 miles from the Corridor within the Goodenow Grove Nature Preserve, is thought to be extirpated (INHS 2013a; INHS 2006).

Although the eastern massasauga rattlesnake was not detected within the Corridor, suitable habitat for this species is present. Figure 3, located in Appendix A, depicts the area where the proposed project may affect the eastern massasauga.

3.2 Sheepnose mussel

3.2.1 Survey Methods

Unionid mussel fauna surveys were performed within streams in the Corridor at locations selected by the INHS. Based upon the results of habitat assessment scores and stream characterizations completed at 22 sites in March and April of 2012, the probability of a stream becoming intermittent during the 2012 field season, and/or a site's proximity to the Corridor, 11 sites were chosen for further study and 11 were eliminated. Three sites were later eliminated from surveys for freshwater mussels because the stream was either devoid of water or a more suitable location for mussels was selected. Three supplementary sites were surveyed for freshwater mussels by INHS personnel based on historical data for mussels in the streams in question. Streams were surveyed by the INHS in Illinois on May 30 and 31, 2012 and on June 25, 26, and 27, 2012 (INHS 2013g). Figure 4, in Appendix A, depicts the locations surveyed for freshwater mussels.

Live mussels and shells were collected at each site to assess past and current freshwater mussel occurrences. Live mussels were surveyed by hand grabbing and visual detection (e.g. trails, siphons, exposed shell) when water conditions permitted. Efforts were made to cover all available habitat types present at a site including riffles, pools, slack water, and areas of differing substrates. The banks and areas of the shoreline upstream and downstream at each site were also visually searched for the presence of fresh dead and relict shells. Timed searches ranged from 1 to 6 person-hours at each site (Cummings and Tiemann 2013).

3.2.2 Survey Results

Surveys for the sheepnose mussel within Illinois were conducted by the INHS at 11 separate locations during May and June of 2012. Subsequent to the mussel surveys, INHS botanists collected several mussel shells from a site on the Kankakee River, located approximately 1,200 feet downstream of its confluence with Forked Creek (INHS survey site ILINX-25). Included among these shells was a fresh dead specimen of the sheepnose (Cummings and Tiemann 2013).

The sheepnose mussel is federally listed within its entire range. However, the sheepnose mussel is not listed in Lake County, Indiana and habitat for the sheepnose mussel is not present within the Corridor in Indiana. The sheepnose mussel is usually found in medium-sized creeks, inhabiting areas with a swift current, although it is occasionally found in some larger rivers which are not present within Indiana.

3.2.3 Status Within the Action Area

A fresh, dead sheepnose mussel was found within the Kankakee River near the survey area, located approximately 1,200 feet downstream of its confluence with Forked Creek (INHS survey site ILINX-25). The sheepnose mussel has been collected within the Kankakee River in Wilmington in 1988, and at the British Petroleum Pipeline crossing (approximately 2.7 miles west-northwest of Wilmington) in 2001, 2004, and 2007, but was not found during the 2009 survey (Cummings and Tiemann 2013).

Suitable habitat for the sheepnose mussel is present in the Kankakee River within the Corridor. No critical habitat has been designated for this species.

There are 22 records of sheepnose from the INHS mussel database for sheepnose in the Illinois portion of the Kankakee River that span from 1960 to 2010. Table 3-1 depicts records for the sheepnose mussel within the Kankakee River in Will and Kankakee counties, Illinois. Populations of sheepnose mussel within the Kankakee River in Indiana are thought to be extirpated due to extensive channelization during the early 20th century.

Recent (1984-2012) mussel surveys have been conducted for a variety of purposes on the Kankakee River from the towns of Wilmington on the northern section to Momence on the southern section of the river. The surveys have covered the majority of the river's length, and sheepnose have been taken at all locations surveyed, including those at or near Wilmington, Custer Park, Kankakee, Aroma Park, and Momence. Data were gathered from published and unpublished reports in order to gather mussel density data that could be applied to the Wilmington area in order to calculate mean sheepnose density for the Kankakee River.

Sampling techniques using timed searches can underestimate rare species, especially in complex habitats (Huang *et al*. 2011). Surveys at different Kankakee River locations were conducted as either area searches, where all measured habitat was examined, or as timed searches, where limited habitat was examined. Assumptions were made from practical experience of wading surveys about the amount of substrate searched during

Table 3-1. Sheepnose Mussel Records within the Kankakee River

Catalogue #	Drainage	County	Year
INHS 10427	(Illinois River Dr.)	Kankakee	1960
INHS 11340	(Illinois River Dr.)	Kankakee	1960
INHS 14232	(Illinois River Dr.)	Kankakee	1986
INHS 12026	(Illinois River Dr.)	Kankakee	1991
INHS 16244	(Illinois River Dr.)	Kankakee	1994
INHS 24391	(Illinois River Dr.)	Kankakee	2000
INHS 25444	(Illinois River Dr.)	Kankakee	2000
INHS 25568	(Illinois River Dr.)	Kankakee	2001
INHS 36599	(Illinois River Dr.)	Kankakee	2007
INHS 39181	(Illinois River Dr.)	Kankakee	2010
INHS 29903	(Illinois River Dr.)	Will	1966
INHS 1929	(Illinois River Dr.)	Will	1984
INHS 11500	(Illinois River Dr.)	Will	1985
INHS 2598	(Illinois River Dr.)	Will	1986
INHS 5825	(Illinois River Dr.)	Will	1988
INHS 12051	(Illinois River Dr.)	Will	1991
INHS 12075	(Illinois River Dr.)	Will	1991
INHS 42501	(Illinois River Dr.)	Will	2004
INHS 36262	(Illinois River Dr.)	Will	2007
INHS 32865	(Illinois River Dr.)	Will	2008
INHS 36112	(Illinois River Dr.)	Will	2009
INHS 39208	(Illinois River Dr.)	Will	2010

Source: Illinois Natural History Survey, 2013f

timed surveys on the Kankakee. A four person-hour search on the Kankakee would cover approximately 5,380-10,800 square feet (500-1000 square meters) during a typical survey (Shedd Aquarium 2005, 2007). Total mussel densities and sheepnose densities were calculated based on these assumptions, and expressed as densities per square foot.

Total extant mussels ranged from 0.001 to 0.19 per square foot at Wilmington (1984) to Custer Park (2005), respectively. Custer Park may be an anomaly as it represents a thriving bed of muckets (*Actinonaias ligamentina*) that can reach densities exceeding several hundred per square meter. Sheepnose densities ranged from 0.000002 per square foot at Wilmington (1984) to 0.00037 per square foot at Momence (2007). All densities for total mussels and sheepnose were calculated as mean densities based on all data available for the Kankakee at six locations. Table 3-2 depicts the total mussel and sheepnose densities at each survey location.

Table 3-2. Sheepnose Mussel Number and Density within the Kankakee River

Date	Locality (City/Town)	Total Mussels	Total Species	Total Sheepnose	Total Survey Area (ft^2)	Mussel Density ($/ft^2$ max)	Mussel Density ($/ft^2$ min)	Sheepnose ($/ft^2$ max)	Sheepnose ($/ft^2$ min)	Surveyors
1912	Momence	Hundreds	16	3	.....	.....	.....	.....	.....	US Fisheries Bureau
1984	Kankakee	579	17	0	105,486	0.00550	0.00550	.....	.....	INHS
1984	Wilmington	480	11	1	463,493	0.00104	0.00104	0.000002	0.0000020	INHS
2005	Custer Park, 2 mi >	1046	13	1	5380 - 10,800	0.19442	0.09685	0.000186	0.0000925	Shedd Aquarium
2007	Momence	108	18	2	5380 - 10,800	0.02007	0.01000	0.000372	0.0001851	Shedd Aquarium
2012	Kankakee Rt 17	185	16	1	5380 - 10,800	0.03439	0.01713	0.000186	0.0000925	INHS
2012	Aroma Park	163	15	1	5380 - 10,800	0.03030	0.01509	0.000186	0.0000925	INHS

Sources: Wilson, C. B., & Clark, H. W. 1912. The Mussel Fauna of the Kankakee Basin (No. 758). US Government Printing Office.
Shedd Aquarium. 2007. Mussel surveys Kankakee River in 2005 and 2007. Roger Klocek Personal communication 2013.
Kasprowicz, Jeanine M., Mark J. Wetzel, Kevin S. Cummings, Warren U. Brigham. 1985. Survey of Kankakee River Fishes and Mussels at Illinois Route 53 Bridge in Wilmington, Will County, Illinois. Illinois Natural History Survey.
Cummings, K.S. and J. S. Tiemann. 2013. A Limited Assessment of the Unionid Mussel Fauna Associated with Streams in the IDOT Illiana Expressway Project Corridor in Will County, Illinois. INHS/IDOT Statewide Biological Assessment Program Report 2013(15). IDOT Job No.: P-91-749-10 (Seq. Nos.: 16651A and 16651B). INHS Job No.: FS-567.

The percent composition of sheepnose to extant mussels collected ranged from 0.01 percent at Custer Park to 1.9 percent of the catch at Momence. The mean density of sheepnose was calculated as 0.00014 per square foot equivalent to 1.4 sheepnose per 10,000 square feet. This value is conservative and has not factored in the underestimate of surveys based on timed searches. Huang (op. cit.) calculates that those four person-hour searches often need to be doubled or tripled in time in order to detect rare species.

3.2.4 Factors Affecting the Species Environment Within the Action Area

The Kankakee River at the proposed crossing is not channelized and retains natural characteristics through the Corridor. The river is confined to its banks which are stable and mostly steep. There are no structures or bridges in the vicinity of the proposed crossings of the river. The addition of piers or abutments would not limit the ability of the river to continue its current flow pattern. The steep outside banks of the river through the Corridor is the limiting factor in the movement of the river through its floodplain.

There are two impoundments located along the Kankakee River in Illinois; a 12-foot high dam located approximately 4 miles downstream of the confluence of the Kankakee and Iroquois Rivers, and a second approximately 1.5 miles upstream of the Corridor at the City of Wilmington, Illinois. Impoundments result in the modification of riffle and shoal habitats, and alter downstream water quality and riverine habitat. The reproductive process of riverine mussels is generally disrupted by impoundments, making the sheepnose unable to successfully reproduce and recruit under reservoir conditions (Ohio River Valley Ecosystem Team 2002).

Complete channelization of the entire Kankakee River in Indiana to the state line was completed in 1917. The old channel in Indiana was replaced by a channel 82 miles long. Even with channelization and shortening of the river, the channel gradient along this portion of the river is very mild, averaging less than 1 foot per mile (Knapp 1992). Channelization of the entire Kankakee River in Indiana may contribute to the lack of sheepnose presence in Indiana (Butler 2002). Dredging and channelization activities alter a stream's physical characteristics (e.g., accelerated erosion, reduced depth, decreased habitat diversity, geomorphic instability, riparian canopy loss) and biological characteristics (e.g., decreased fish and mussel diversity, changed species composition and abundance, decreased biomass, and reduced growth rates) (Ohio River Valley Ecosystem Team 2002).

Major withdrawals in the Illinois portion of the Kankakee watershed for cooling water include Consumers Illinois Water Company for the cities of Kankakee, Bradley, and Bourbonnais, and for the Braidwood power plant. A withdrawal for the city of Wilmington is relatively small and does not substantial impact flows on the Kankakee River (Knapp 1992). The combined impacts on the Kankakee River flows due to irrigation withdrawals, cooling water withdrawals (downstream), return flows, and increased baseflow is estimated to reduce low flows by about 50 cfs (Knapp 1992). Current low flow in the Kankakee River is estimated to be 478 cfs.

Contaminants contained in point and non-point discharges can degrade water and substrate quality and adversely impact if not destroy mussel populations. Mussels are very intolerant of heavy metals and even at low levels certain heavy metals may inhibit glochidial attachment to fish hosts. Cadmium appears to be the heavy metal most toxic to mussels, although chromium, copper, mercury, and zinc also negatively affect biological processes (Ohio River Valley Ecosystem Team 2002). Ammonia has also been shown to be lethal to mussels at concentrations of 5.0 parts-per-million (ppm). Contaminants associated with households and urban areas, particularly those from industrial and municipal effluents, may include heavy metals, chlorine, phosphorus, and numerous organic compounds (Ohio River Valley Ecosystem Team 2002).

Agricultural sources of chemical contaminants include nutrient enrichment (e.g., runoff from livestock farms and feedlots, fertilizers from row crops) and pesticides (e.g., from row crops). Nitrate concentrations are particularly high in surface waters downstream of agricultural areas (Ohio River Valley Ecosystem Team 2002). Agriculture is the major land use and economic activity in the Kankakee River watershed. Farming accounts for 71 percent and 94 percent of the total acreage in Kankakee and Iroquois Counties, respectively, and over 75 percent of the total acreage in the Indiana portion of the watershed (Knapp 1992).

- Siltation and general sedimentation runoff effects on mussels include reduced feeding and respiratory efficiency from clogged gills, disrupted metabolic processes, reduced growth rates, increased substrate instability, limited burrowing activity, and physical smothering. The primary impacts of excess sediment on mussels are sublethal, with detrimental effects not immediately apparent. In addition, conglutinates appear to function in attracting potential hosts, which are dependent on clear water during the critical time of the year when mussels are releasing their glochidia. Agricultural activities produce the most substantial amount of sediment that enters streams (Ohio River Valley Ecosystem Team 2002). Construction activities that may affect the sheepnose mussel are only present within the Kankakee River. Figure 2, located in Appendix A, depicts the Action Area for the proposed project as it relates to sheepnose mussel.
- The project involves construction of a bridge over the Kankakee River, which will require in-stream work, approximately 2,600 feet upstream from the identified a fresh dead shell of the sheepnose mussel. The Kankakee River, within the vicinity of the project, provides habitat for the sheepnose mussel.

3.3 Eastern Prairie Fringed Orchid

3.3.1 Survey Methods

The USFWS developed a survey protocol in an effort to maximize the likelihood of detecting the eastern prairie fringed orchid (USFWS 2013b). This protocol maximizes the likelihood of detecting the eastern prairie fringed orchid within the project action area. In northeastern Illinois, the USFWS protocol requires surveys to be conducted during the species' typical bloom time, which is between June 28 and July 11. The

USFWS in Indiana has recognized that the eastern prairie fringed orchid is not present within Lake County. Therefore, the USFWS does not require surveys for this species to be completed for the Indiana portion of the project.

3.3.1.1 Illinois

The INHS conducted surveys within areas of suitable habitat for the eastern prairie fringed orchid during the growing seasons of 2010, 2012, and 2013 within the project survey area (INHS 2013b; INHS 2013j, see Appendix J). Coordination with the USFWS was initiated before the 2013 additional eastern prairie fringed orchid surveys were conducted. Results of the 2013 surveys have been incorporated into this document. The additional surveys for this species was the result of drought conditions during the 2012 growing season. More normal precipitation occurred in 2013.

Prior to conducting surveys, the INHS outlined remnant prairies, wetlands, and other community types with suitable eastern prairie fringed orchid habitat within the project survey area. Suitable habitat within the project survey area includes mesic, wet-mesic and wet prairie, as well as sedge meadows.

IDOT provided INHS with a list of 15 sites to be searched for the eastern prairie fringed orchid during the 2013 surveys within the Illinois portion of the survey area (INHS 2013j). These sites were identified during INHS wetland delineations conducted in 2012 and 2013 and botanical surveys conducted in 2012 (INHS 2013d; INHS 2013b; INHS 2013j). Based on a review of these sites by the USFWS, it was determined that they meet the criteria for potential eastern prairie fringed orchid habitat (INHS 2013j).

In addition to the 15 sites noted above, one site (Wetland Site 332) located in the 2012 survey area met the USFWS criteria for potential eastern prairie fringed orchid habitat and therefore was included in the 2013 eastern prairie fringed orchid survey. This site (Wetland Site 332) has a native mean C-value of 3.7 (native Floristic Quality Inventory [FQI] of 19.5) and has five associate species of the eastern prairie fringed orchid. Wetland Site 332, surveyed in March 2013, likely would have a higher FQI if the botanical survey was conducted during the growing season (INHS 2013j).

It should also be noted that the area where three sterile rosettes potentially belonging to the orchid family (Orchidaceae) were observed during the 2012 surveys, was revisited in 2013.

The INHS also conducted general botanical surveys in an effort to provide a comprehensive list of vascular plant species within the survey area. This survey included documentation of occurrences of threatened and endangered species; identification of high quality botanical sites; and identification of native vegetation communities and their corresponding species compositions; and an evaluation of natural quality.

Areas containing potential natural vegetation composition were identified on aerial photographs and/or through ground explorations. These areas were then searched for threatened and endangered species and species of concern. The Illinois Natural

Heritage Database (INHD 2012) was also examined for all threatened and endangered vascular plant species reported from this area to refine the ground survey focus (INHS 2013b).

3.3.1.2 Indiana

Cardno JFNew conducted general botanical surveys in an effort to provide a comprehensive list of vascular plant species within the mesic prairies and dry-mesic prairie remnants within the project survey area. This survey included documentation of occurrences of threatened and endangered species; identification of high quality botanical sites; and identification of native vegetation communities and their corresponding species compositions; and an evaluation of natural quality. Based on coordination with the USFWS, specific surveys for the eastern prairie fringed orchid were not conducted.

Prairie areas were categorized by quality using a grading system of A through F, A being the highest quality and F being severely degraded. All areas containing potential natural vegetation composition were identified on aerial photographs and/or through ground explorations. These areas were then searched for threatened and endangered species and species of concern (Cardno JFNew 2013c).

3.3.2 Survey Results

The eastern prairie fringed orchid was not identified within the survey area. Search results from the INHD did not reveal records of the eastern prairie fringed orchid within the survey area (INHS 2013b; INHS 2013j; Cardno JFNew 2013c); however, suitable habitat for this species was found within the Corridor (see Appendix A, Figure 6).

3.3.2.1 Illinois

Due to unseasonably warm temperatures during the spring and early summer of 2012, surveys dates for the eastern prairie fringed orchid in the survey area deviated from survey guidelines. The USFWS provided approval for the INHS to conduct surveys on June 27 and 29 and July 9, which is earlier than outlined in the standard protocol (INHS 2013b). It should be noted that the 2012 growing season in Illinois was one of the hottest on record, and much of the state was affected by a severe drought (INHS 2013b).

Additional areas of potential eastern prairie fringed orchid habitat were not identified based on a review of all areas in the survey area (INHS 2013b). Areas previously surveyed for the eastern prairie fringed orchid in 2009 and 2010 where orchids were not found, were not resurveyed during the 2012 surveys (INHS 2013b).

Areas of suitable habitat that were searched in 2012 include remnant prairies (or, in some cases, only the portions of remnant habitats possessing the appropriate moisture class) along the Canadian National Railway in Peotone (Prairie Sites 1 – 12). Prairie Sites 13, 14, 15, 16, and 19 were not deemed to have suitable habitat as these sites were either too degraded or had the wrong moisture class (INHS 2013b).

Surveys for the eastern prairie fringed orchid were conducted at Prairie Site 17 during the 2009 growing season and at Prairie Site 18 during the 2010 growing season (INHS 2013b). Multiple visits were made to Prairie Sites 17 and 18 during the 2012 growing season; however, these visits were not made between June 28 and July 11 (INHS 2013b).

In May of 2012, three basal rosettes of two orchid species were found on the margins of a highly degraded shrubland approximately 500 feet west of I-55, near Wilmington, Illinois (INHS 2013b). The rosettes were marked in order to relocate them later in the season (INHS 2013b).

During 2013, two of the three sterile rosettes observed during the 2012 growing season were revisited and determined to be colic root (*Aletris farinosa*) (INHS 2013j). The third rosette could not be found; however, while appearing to be an orchid, it is believed that this rosette is not an eastern prairie fringed orchid and is likely another as yet undetermined species (INHS 2013j). Repeated visits to the sterile rosettes made during late June of 2012 found the leaves of this third rosette brown and wilted (INHS 2013j). It is possible the plant represented by this third rosette died during the severe drought that occurred in this region during the 2012 growing season (INHS 2013j).

The 2013 eastern prairie fringed orchid surveys were directed by USFWS to begin when individuals at known eastern prairie fringed orchid sites within Will County began blooming. Individuals at Grant Creek Nature Preserve began blooming on June 21, 2013 and surveys were approved to begin on June 22, 2013 by Cathy Pollack of the USFWS (INHS 2013j). The 2013 surveys ended on July 5, 2013 (INHS 2013j).

One landowner refused access to multiple survey sites; therefore, arrangements were made with the Will County Sheriff's Department to gain access via police escort. This delayed access to these sites, and in order to meet the three non-consecutive day requirement, approval was given to extend surveys to July 9 by Cathy Pollack of the USFWS (INHS 2013j).

Habitat for the eastern prairie fringed orchid varies from mesic to wet prairies, sedge meadows, and marsh edges. Critical habitat has not been designated for this species. Though the eastern prairie fringed orchid is not known to occur within the Corridor, suitable habitat for this species is present.

3.3.2.2 Indiana

Remnant mesic prairie communities were observed at four locations within the survey area (Cardno JFNew 2013c). At all but one of these locations, the mesic prairie was substantially degraded. Along the CSX Railroad tracks, a mesic prairie remnant was less degraded and ranged from good to medium quality (grade B to C-).

The highest quality remnant mesic prairie observed within the survey area is located between milepost 6.4 and 6.5, along the east side of a railroad track (Cardno JFNew 2013c). Pockets of good quality (grade B) mesic prairie were documented amongst degraded (grade C-) mesic prairie and forbland and fencerow areas.

Another mesic prairie is located between milepost 5.8 and 6.1 of the CSX Railroad tracks (Cardno JFNew 2013c). This area has generally low diversity for a mesic prairie community. As a result of this, and a lack of dominance by prairie grasses, this area was assigned a grade of C.

Four small remnant mesic prairies are present between milepost 5.2 and 5.6 of the CSX Railroad tracks (Cardno JFNew 2013c). These areas are of fairly low natural area quality (grade D+) due to poor prairie structure and composition, and were characterized by prairie species. Three degraded (grade D-) mesic prairie remnants were identified between milepost 5.0 and 5.2 (Cardno JFNew 2013c). Past land use and disturbances, potentially in the form of hydrological drainage, have led to the degradation of these areas.

These botanical surveys confirm that the eastern prairie fringed orchid is not present within the Indiana portion of the project.

3.3.3 Status Within the Action Area

A population of eastern prairie fringed orchid is present at Grant Creek Prairie Nature Preserve (USFWS 2010a; Hill 2007) located adjacent to I-55 south of Blodgett, Illinois. The Grant Creek Prairie Nature Preserve is located approximately 3 miles north of the Corridor. This eastern prairie fringed orchid occurs approximately 100 feet from MNTP property (Ulaszek and Glass 2001). Factors Affecting the Species Environment Within the Action Area

Loss or modification of habitat is the principal cause of eastern prairie fringed orchid decline (USFWS 1999a). Alteration of local hydrology, conversion of habitat to cropland and urban built-up land, fire suppression, and herbivory pose the greatest threats to this species' habitat (Center for Plant Conservation 2010c; USFWS 1999a).

Ditching or tile drainage for conversion to cropland and urban development can cause microscale reductions in soil moisture, even to areas located adjacent to the development, which can impact orchid growth and flowering (USFWS 1999a).

Routine burning of late-successional prairie remnants supporting this species is required to reduce cover of woody vegetation and to reduce competition from invasive species. Lack of fire within these ecosystems allows for woody vegetation encroachment, which in turn can reduce the pollinators' ability to find the orchid flowers (USFWS 1999a; Center for Plant Conservation 2010c). Invasive, non-native plants such as reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), and glossy buckthorn (*Frangula alnus*) poses a serious threat to the eastern prairie fringed orchid (USFWS 1999a).

It should be noted that the orchid's dependence upon hawkmoths for pollination makes it vulnerable to hawkmoth population fluctuations (USFWS 1999a). Information about population status and basic life history requirements, such as larval host plants of most hawkmoth species, is not known for many hawkmoths (USFWS 1999a). Wide-scale use

of insecticides may negatively impact hawkmoths, this orchid's only known pollinator (USFWS 1999a).

At least one Michigan and two Illinois populations have been impacted by removal of plants through illegal poaching or for scientific or commercial purposes (USFWS 1999a). Mature eastern prairie fringed orchid plants are often sought out in the wild because this species is rarely grown from seed (USFWS 1999a).

In Illinois, demographic monitoring to track the status of individual populations of the eastern prairie fringed orchid and hand pollination have been used as recovery strategies (USFWS 2010c). Demographic data collected for the eastern prairie fringed orchid in Illinois since 1991 indicates fluctuations in population size from year to year, with radical shifts in population size at the time of and following periods of drought (USFWS 2010a; USFWS 2012b). These findings are consistent with research conducted by Bowles, which conclude that eastern prairie fringed orchid growth is dependent upon moisture levels (Bowles 1983). Data collected from the monitoring effort are used to drive guidance for augmentation of existing populations and reintroduction of seed for new population establishment (USFWS 2010a).

The eastern prairie fringed orchid was not identified within the Corridor. The closest known eastern prairie fringed orchid population is present at Grant Creek Prairie Nature Preserve (USFWS 2010a) adjacent to I-55 south of Blodgett, Illinois. The Grant Creek Prairie Nature Preserve is located approximately 3 miles north of the Corridor. This population will not be impacted as a result of construction activities. However, lighting associated with the proposed project could impact the primary pollinator to the orchid which is the hawkmoth or sphinx moth. The area in which the eastern prairie fringed orchid may be affected lies at the proposed interchange of the Corridor and I-55.

Past and present land-use changes within the vicinity of the eastern prairie fringed orchid population at Grant Creek Prairie Nature Preserve and near the Kankakee River Illinois Natural Areas Inventory (INAI) site have had and continue to have an influence on the sheepnose mussel and eastern prairie fringed orchid and their habitat.

3.4 Indiana Bat

Based on the results of an extensive 2 year study to capture Indiana bats in northeastern Illinois, the USFWS indicated in 2008 that the Indiana bat was likely not present in northeastern Illinois. In a letter dated October 23, 2012, the USFWS stated that the existing data indicates the Indiana bat is not likely to be present in Northeastern Illinois, or if present, occurs only in very low numbers (USFWS 2012c; Appendix M).

3.4.1 Survey Methods

Mist netting for the Indiana bat was conducted at selected locations within the Corridor in Illinois by the INHS and in Indiana by Cardno JFNew (2013; see Appendix I). Surveys followed the protocol in the *Draft Indiana Bat Recovery Plan* (USFWS 2007a).

3.4.1.1 Illinois

Surveys for the Indiana bat within the Illinois portion of the survey area were only conducted by the INHS along Forked Creek in 2012 (INHS 2013h; See Appendix J). This survey was conducted for a minimum of 5 hours, beginning immediately after dusk, and each site was sampled for two nights (INHS 2013h). Two mist nets were placed over streams or other suitable locations. In addition, the INHS has identified Site E located east of the Kankakee River and south of the Corridor within the survey area as potential Indiana bat habitat. Figure 5 in Appendix A depicts the location of Site E which contains potential Indiana bat habitat along the Kankakee River.

At the request of the USFWS, surveys for the Indiana bat in Illinois were conducted in 2013 using USFWS *2013 Revised Range-wide Indiana Bat Summer Survey Guidelines* (USFWS 2013i). Black nylon mist nets (1.5 inch mesh) were used with two sets of nets of varying lengths suspended over a potential flyway (INHS 2013i). The nets were opened at dusk and monitored for 5 hours each night (INHS 2013i). These surveys were conducted within suitable habitat within a 5-mile radius of the Corridor at nine sites on Will County Forest Preserve District property; Forsythe Woods Site 1, Forsythe Woods Site 2, Donohue Grove Site 1, Donohue Grove Site 2, Laughton Preserve, Raccoon Grove Site 1, Raccoon Grove Site 2, Goodenow Grove Site 1, and Goodenow Groove Site 2 (INHS 2013i; see Appendix K). These sites were selected by the USFWS with input from the Will County Forest Preserve District.

The following data were recorded for each bat captured: species, sex, age class (juvenile or adult), reproductive condition, and weight. Bats were released at the capture site immediately after examination.

The INHS identified sites of potentially suitable habitat for mist net surveys on May 9, 2012 (INHS 2013). It was determined that the vast majority of the waterways in the Survey area were too narrow and the flyways too cluttered with trees and branches to mist net. The Kankakee River and its tributaries were too deep to mist net.

One site located on Forked Creek (Site 6) was determined suitable to conduct mist net surveys. Figure 5 in Appendix A depicts the location of the mist netting site within Illinois in 2012. Site 6 is located outside of the Corridor, but it was near the project, accessible, and the creek crosses the Corridor to the north. Site 6 is within the known distance that an Indiana bat may travel between roosts (INHS 2013c). While foraging, Kurta et al. (2002) found that Indiana bats in a maternity colony in Michigan traveled to roost trees 5.1 miles (8.2 km) apart in the summer and traveled as much as 3.6 miles (5.8 km) between roost trees overnight (INHS 2013c). In addition, females were found to travel 0.3 to 5.2 mile (0.5 – 8.4 km) between roosts and foraging areas (Murray and Kurta 2004; Sparks et al. 2005; INHS 2013c).

3.4.1.2 Indiana

Surveys for the Indiana bat within Indiana were conducted by Cardno JFNew (2013) at six locations of deciduous and mixed forests (i.e., potential habitat for Indiana bats) suitable for mist netting. The location and number of mist net sites was submitted for

comment by the USFWS prior to conducting surveys (Cardno JFNew 2013). Figure 5 in Appendix A depicts the locations of the mist netting and acoustic survey sites in 2012 and 2013 as well as Indiana bat habitat identified within or adjacent to the Corridor in Indiana (Cardno JFNew 2013).

Surveys in Indiana were conducted for 5 hours each night, weather permitting, and each site was sampled for two nights, resulting in four net-nights per site. Full descriptions of the mist net sampling technique can be found in Merritt and Mengelkoch (2013) and Cardno JFNew (2012). Each bat captured was identified to species, sex and reproductive condition was noted, was weighed, and was released.

3.4.2 Survey Results

3.4.2.1 Illinois

At Forked Creek (Site 6), dominant trees in the area of the mist net survey included eastern cottonwood (*Populus deltoides*), silver maple (*Acer saccharinum*), ash (*Fraxinus* spp.), hackberry (*Celtis occidentalis*), and box elder (*Acer negundo*). There were a few dead trees along the edge of the creek, some had peeling bark.

Mist netting was conducted at Forked Creek (Site 6) on August 6 and 7, 2012. The eastern red bat (*Lasiurus borealis*) and the big brown bat (*Eptesicus fuscus*) were captured during the Indiana bat mist netting survey (Table 3-3). No Indiana bats were captured at this site.

Table 3-3. 2012 Mist Netting Result - Illinois

Site	Location/Habitat	Bat Species		Total
		Eastern Red	Big Brown	
Site 6	Forked Creek	5	1	**6**

Source: INHS 2013c.

Mist netting was conducted on July 8, 9, 10, 11, 15, 16, 19, and 20, 2013. The tree bat (*Lasiurus* sp.), eastern red bat, big brown bat, and northern long-eared bat (*Myotis septentrionalis*) were captured during the Indiana bat mist netting survey (Table 3-4). No Indiana bats were captured at this site.

3.4.2.2 Indiana

Mist netting was conducted between June 30 and August 4, 2012 as well as between May 30 and June 1, 2013. Table 3-5 depicts the results of the mist netting within Indiana. The eastern red bat and the northern long-eared bat were captured during the Indiana bat mist netting survey (Cardno JFNew 2012) and are listed as state species of special concern. It should be noted that two mist nets (A and B) were utilized at each site (Cardno JFNew 2013).

Table 3-4. 2013 Mist Netting Results - Illinois

Site	Location/Habitat	Bat Species				Total
		Tree Bat	Eastern Red	Big Brown	Northern Long-eared*	
Site 1	Forsythe Woods	1	0	0	0	**1**
Site 2	Forsythe Woods	0	0	0	0	**0**
Site 1	Donohue Grove	0	1	0	1	**2**
Site 2	Donohue Grove	0	0	0	0	**0**
Site 1	Laughton Preserve	0	1	0	0	**1**
Site 1	Raccoon Grove	0	0	6	0	**6**
Site 2	Raccoon Grove	0	0	14	0	**14**
Site 1	Goodenow Grove	0	0	0	0	**0**
Site 2	Goodenow Grove	0	1	0	0	**1**

Source: INHS 2013i.

Table 3-5. Mist Netting Results - Indiana

Site	Location/Habitat	Bat Species			Total
		Eastern Red	Big Brown	Northern Long-eared*	
IEN 1	Unnamed tributary to West Creek	2	0	0	**2**
IEN 2	Forested	0	2	0	**2**
IEN 3	Adjacent to a pond	0	0	0	**0**
IEN 4	Cedar Creek	6	2	2	**10**
IEN 5	Forested	6	4	0	**10**
IEN 6	Upland road/trail	1	1	0	**2**
Total		**15**	**9**	**2**	**26**

Source: Cardno JFNew 2013.

* A 12-month finding on a petition to list the northern long-eared bat as endangered or threatened under the ESA was published on October 2, 2013 in the Federal Register. After review of the best available scientific and commercial information, the USFWS found that listing the northern long-eared bat is warranted. Accordingly, the USFWS proposes to list the northern long-eared bat as an endangered species throughout its range.

In addition, acoustic surveys were used to supplement mist netting sites by detecting bats that were in areas that could not be netted (i.e., woodlot edges, woodlot openings, or open water bodies). Acoustic filters were used to determine if any potential Indiana bats were detected. If a potential Indiana bat pass was recorded, another night of mist netting would take place. A total of 2,049 files were recorded at five acoustic sites (10 detector nights) concurrently during the mist netting. Table 3-6 depicts the number of acoustic files recorded and the number of bat passes recording and identified at each acoustic site. The location of each acoustic site is depicted on Figure 5 in Appendix A.

Table 3-6. Acoustic Survey Results – Indiana

Site	Big Brown	Eastern Red	Hoary	*Myotis* Species	Evening	Tricolored	Unidentified Low Frequency	Unidentified High Frequency	Total
IEA1	476	156	18	42	19	0	112	70	**893**
IEA2	36	140	0	14	0	0	10	232	**432**
IEA3	0	11	0	0	0	0	5	9	**25**
IEA4	15	189	1	0	0	0	52	184	**441**
IEA5	40	14	0	0	0	0	162	42	**258**
Total	**567**	**510**	**19**	**56**	**19**	**0**	**341**	**537**	**2,049**

Source: Cardno JFNew 2013.

No Indiana bats were caught or identified during the mist netting and acoustic surveys. No additional surveys for Indiana bats within Indiana are anticipated.

3.4.3 Status Within the Action Area

Indiana bat surveys were conducted within MNTP, adjacent to the Corridor, during the summers of 2007, 2008, and 2009. The primary objective of the survey was to determine the presence/absence of Indiana bat summer maternity activity in areas where wildlife personnel from MNTP felt had the highest likelihood of harboring Indiana bats. Mist net surveys involved a total of 34, 40, 28 net nights (one net night equals one net for one night), totaling 170, 100, 60 hours of netting (number of hours netted) for the 2007, 2008, and 2009 surveys, respectively. No Indiana bats were captured (Widowski *et al*. 2007; McClanahan *et al*. 2008; McClanahan *et al*. 2009).

The Indiana bat is not known to occur in or near the Corridor. There are no known Will County records. Indiana bats hibernate in LaSalle County, approximately 44 miles west of the Corridor. Although Indiana bats often migrate from hibernacula, the only recoveries of individuals have been well to the south, including a site in northeastern Missouri.

3.4.4 Factors Affecting the Species Environment Within the Action Area

Indiana bats appear to be more tolerant of some types of disturbance than of others. Roost trees have been identified in remnant stands of riparian buffer within clearcuts and in active wooded pasture and pig feedlots. However, Garner and Gardner (1992) did not find roost trees in residential areas or in agricultural lands other than partially wooded pastures. Roosts tended to be near streams and away from paved roads. Roost trees were almost always more than 700 meters (2,297 feet) from the nearest paved road, and the mean distance to a paved road for adult females was greater than 1500 meters (4,921 feet).

Industrial and commercial development (at the western terminus), agricultural, and suburban development is extensive and ongoing within the Corridor. Wooded habitat is relatively sparse, fragmented, and generally within riparian corridors except for within a few areas of public land. Based on the literature, most of the Corridor is unsuitable because of existing agricultural use, the proximity of existing paved roads, and frequent disturbance.

Indiana bats consistently follow tree-lined paths rather than cross large open areas, and suitable patches of forest may not be available to Indiana bats unless the patches are connected by a wooded corridor (USFWS 2007). Due to the abundance of agricultural land throughout much of the survey area, there are limited tree-lined paths traversing the Corridor. However, there are observations of Indiana bats crossing interstate highways and an observation of an Indiana bat following linear features not associated with tree cover (USFWS 2007). The predominance of agricultural land may not be a deterrent for Indiana bats as most Indiana bat maternity colonies have been found in agricultural areas with fragmented forests.

Threats to the Indiana bat include destruction, modification, or curtailment of its habitat or range, disease or predation, inadequacy of existing regulatory mechanisms, and other natural or man-made factors affecting its continued existence. Additional threats (i.e., infectious diseases) to Indiana bats are restricted to hibernacula. Generally, infectious disease is not cited as a major factor in the decline of bat populations; however, WNS is a fungus that has resulted in the decline of bat species. Bats contract WNS while hibernating where the fungus thrives within the conditions characteristic of many bat hibernacula (USFWS 2011).

Past clearing of forests for agricultural use has resulted in destruction of potential Indiana bat maternity habitat within the action area. Man-made factors influencing Indiana bat populations include use of organochlorine pesticides (i.e., dieldrin, heptachlor epoxide), organophosphate, carbamate, pyrethroid insecticides, and polychlorinated biphenyls (PCBs); there is evidence that these chemicals cause reproductive failure in bats.

Although the Indiana bat was not identified within the Corridor, suitable habitat for this species is present. Figure 5, located in Appendix A, depicts the area where the proposed project may affect the Indiana bat.

3.5 Eryngium Stem Borer Moth

3.5.1 Survey Methods

In Illinois, the INHS conducted surveys for the Eryngium stem borer moth in locations where significant stands of the host plant, rattlesnake master, was present. The survey locations were selected by the INHS based upon prior botanical surveys conducted for this project within the project survey area (INHS 2013b; INHS 2013k). According to the botanical surveys conducted within the project survey area, the host plant, rattlesnake master, is present at Prairie Sites 1, 3, 4, 5, 6, 7, 8, 17, and 19 (INHS 2013k; INHS 2013b).

However, large stands of the host plant, rattlesnake master were only present at Prairie Sites 1, 2, 3, 4, and 17 (INHS 2013k).

The presence of Eryngium stem borer moths were detected by conducting an assessment of rattlesnake master stems for the characteristic bore holes exuding frass (excrement) that is produced by moth larvae feeding within the stems and roots (INHS 2013k).

3.5.2 Survey Results

Based upon these surveys, the presence as well as habitat for the Eryngium stem borer was confirmed at three locations (Prairie Site 1, Prairie Site 3, and Prairie Site 17; see Figure 7 located in Appendix A) (INHS 2013k). Table 3-7 depicts the Eryngium stem borer moth survey results.

Table 3-7. Eryngium Stem Borer Moth Survey Results - Illinois

Site	Location of Site	Size of Site (acres)	Number of Individuals Observed
Prairie Site 1	East of Peotone, parallel to the west side of the Canadian National Railway	0.2	1
Prairie Site 2	West side of the Canadian National Railway, between Prairie Sites 1 and 3, in Peotone	0.5	0
Prairie Site 3	East of Peotone, parallel to the west side of the Canadian National Railway	0.37	3
Prairie Site 4*	Along the east and west sides of the Canadian National Railway and along the west side of IL Rte. 50, in Peotone	1.27	0
Prairie Site 17	Inside large median between the northbound and southbound lanes of I-55, approximately 2.5 miles west of Wilmington	4.7	3
Total			**7**

Source: INHS 2013k.

*Prairie Site 4 is part of a composite site which is made up by Prairie Sites 4, 5, 6, 7, 8, and 19.

Prairie Site 1 is an intergrading dry-mesic to mesic remnant prairie habitat, and within survey limits, is the highest quality prairie remnant along this railroad line (INHS 2013k). Prairie Site 3 is an intergrading dry-mesic to mesic remnant prairie habitat and though very small, this prairie possesses a noteworthy assemblage of vascular plant species, and retains a high degree of native character (INHS 2013k). Prairie Site 17 is a highly degraded prairie remnant of 4.7 acres that is incurring encroachment by woody vegetation (INHS 2013k).

3.5.3 Status Within the Action Area

In addition to Prairie Sites 1, 3, and 17, the Eryngium stem borer moth is currently known to occur at two sites in Will County (INHS 2013k; USFWS 2013j). Because

poachers have removed individuals from the known populations within Illinois, the location of the two sites within Will County are undisclosed (USFWS 2013j). However, it should be noted that one site is located on Illinois DNR property and the other site is located on private property at a railroad siding (USFWS 2013j). Suitable habitat for the Eryngium stem borer moth is also present at Prairie Sites 1, 2, 3, 4, and 17.

Although only a small number of individuals of Eryngium stem borer moths were detected in the Study Area, they may represent segments of larger populations of this species previously reported to occur in nearby protected areas including the DPCA and MNTP (INHS 2013k; Panzer 1998). However, because the Eryngium stem borer moth is thought to be a poor disperser and is sensitive to fire, the stands of rattlesnake master located within the Corridor likely represent important refuge areas for the moth, given that the mentioned conservation areas are managed with frequent prescribed burning (INHS 2013k). Recent studies of prairie insects in Illinois (reviewed by Dietrich 2009) have shown that the small patches of native prairie vegetation present in highway and railroad rights-of-way are crucial to the survival of many terrestrial insect species that are dependent on prairie plants as hosts because the vast majority of their original habitat has been destroyed by agriculture and urbanization. The prairie sites in the IDOT Illiana Expressway project corridor mentioned above are no exception.

There are no historical records and no known records of Eryngium stem borer moth in Indiana (USFWS 2013j).

3.5.4 Factors Affecting the Species Environment Within the Action Area

Threats to the Eryngium stem borer moth arise from this species being monophagous, or feeding exclusively on the host plant, the rattlesnake master (USFWS 2013j). Although the range of the host plant is large (it occurs in 26 States), the plant's relative densities within prairies is extremely low (comprising less than 1 percent of prairie flora) and the rattlesnake master is not known to occur in disturbed areas (USFWS 2013j).

Due to the extensive loss of undisturbed prairie in the US, remaining prairie remnants that support the rattlesnake master are generally small and isolated (USFWS 2013j). It has been determined, that the Eryngium stem borer moth is highly dependent on remnant patches of native prairie (USFWS 2013j; Panzer *et al.* 1995). Disturbed areas between widely scattered remnant prairie patches that support the remaining Eryngium stem borer moth populations will not support their food plant, rattlesnake-master, making these expansive areas uninhabitable to the moth (USFWS 2013j).

The conservation of good-quality prairie habitat is important for the persistence of the Eryngium stem borer moth, especially those that are small and isolated, which would not be recolonized if they were extirpated (USFWS 2013j). The loss of prairie habitat and the degradation and destruction of remnant prairies occurs in a variety of ways, including, but not limited to development, conversion of prairie for agriculture, grazing, herbicide application, fire, flooding, invasive species encroachment, and succession (USFWS 2013j).

The Eryngium stem borer moth populations at Prairie Sites 1, 3, and 17 are vulnerable, with the most immediate threats being invasive species encroachment, succession, and herbicide application (INHS 2013k).

Specific surveys for the Eryngium stem borer moth were conducted within the Corridor. This species as well as suitable habitat for this species (the host plant for this species in requisite numbers) are present within the Corridor. Figure 7, located in Appendix A, depicts the area where the proposed project may affect the Eryngium stem borer moth.

3.6 Northern Long-Eared Bat

3.6.1 Survey Methods

Mist netting for bats was conducted at selected locations within the Corridor in Illinois by the INHS and in Indiana by Cardno JFNew. Although sampling was conducted for Indiana bats, all bats encountered during the surveys were identified. Surveys followed the protocol in the *Draft Indiana Bat Recovery Plan* (USFWS 2007a). Please see Section 4.1.1.1 and Section 4.1.1.2 for detailed survey methodologies utilized in Illinois and Indiana, respectively.

3.6.2 Survey Results

3.6.2.1 Illinois

Mist netting was conducted at Forked Creek (Site 6) on August 6 and 7, 2012. See Table 3-3 for survey results. Northern long-eared bats were not captured at this site (INHS 2013i). Mist netting was conducted on July 8, 9, 10, 11, 15, 16, 19, and 20, 2013. One northern long-eared bat was captured at Donohue Grove (Site 1) (Table 3-4; INHS 2013i).

3.6.2.2 Indiana

Mist netting was conducted between June 30 and August 4, 2012 as well as between May 30 and June 1, 2013. Table 3-5 depicts the results of the mist netting within Indiana. (Cardno JFNew 2013). Two northern long-eared bats were captured at Cedar Creek (IEN 4) in Indiana (Cardno JFNew 2013).

In addition, acoustic surveys were used to supplement mist netting sites by detecting bats that were in areas that could not be netted (i.e., woodlot edges, woodlot openings, or open water bodies). Table 3-6 depicts the number of acoustic files recorded and the number of bat passes recording and identified at each acoustic site. No northern long-eared bats were identified during the acoustic surveys. However, 56 unidentified *Myotis* species were identified during mist-net surveys (Cardno JFNew 2013).

3.6.3 Status Within the Action Area

Indiana bat surveys were conducted within MNTP, adjacent to the Corridor, during the summers of 2007, 2008, and 2009. The primary objective of the survey was to determine the presence/absence of Indiana bat summer maternity activity in areas where wildlife personnel from MNTP felt had the highest likelihood of harboring Indiana bats. Northern long-eared bats were not captured during the 2007 and 2008 mist-net surveys (Widowski *et*

al. 2007; McClanahan *et al*. 2008). However, two northern long-eared bats were captured during the 2009 mist-net surveys along Jackson Creek (McClanahan *et al*. 2009).

There is one Will County record of the northern long-eared bat from 1975 (INHS 2013). Indiana bats hibernate in LaSalle County, approximately 44 miles west of the Corridor. Northern long-eared bats may hibernate at this location as well.

3.6.4 Factors Affecting the Species Environment Within the Action Area

The primary threat (i.e., infectious diseases) to the northern long-eared bat is restricted to hibernacula. Infectious disease is cited as an emerging major factor in the decline of bat populations and poses a considerable threat to hibernating bat species throughout North America (USFWS 2013k). WNS is a fungus that has resulted in the unprecedented mortality of bat species. Bats contract WNS while hibernating where the fungus thrives within the conditions characteristic of many bat hibernacula (USFWS 2013k).

Since its first documented appearance in New York in 2006, WNS has spread rapidly throughout the Northeast and is expanding through the Midwest (USFWS 2013k). As of August 2013, WNS has been confirmed in 22 states (USFWS 2013k). USFWS biologists and partners estimate that 5.7 million to 6.7 million bats of several species have died from WNS (USFWS 2013k).

Other threats to the northern long-eared bat include development and timber harvest; activities that may modify or destroy habitat for this species (USFWS 2013k). Although such activities occur, these activities alone do not have significant, population-level effects on the northern long-eared bat (USFWS 2013k).

Riparian areas and temperate forests, two habitat types essential to the northern long-eared bat, are particularly affected by expanding residential development (Smith and Wachob 2006). The northern long-eared bat uses forested habitat for summer roosting and the formation of maternity colonies, and rely on the insect abundance fostered by riparian habitats to meet the energetic requirements associated with reproduction. Urban and agricultural development fragments contiguous habitat patches, increasing the proportion of edge habitat, which has been correlated with reduced occupancy by northern long-eared bats in forested habitat (Yates and Muzika 2006).

Industrial and commercial development (at the western terminus), agricultural, and suburban development is extensive and ongoing within the Corridor. Agricultural development is a somewhat different issue: the general effects of agricultural development, habitat loss, degradation, and fragmentation, are similar to those of residential development. However, the percentage of land area occupied by agriculture has been in steep decline in the past several decades (CBD 2010).

Wooded habitat is relatively sparse, fragmented, and generally within riparian corridors except for within a few areas of public land. Based on the literature, forested areas and riparian corridors present suitable habitat for the northern long-eared bat within the Corridor.

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4.0 Effects of the Action

4.1 Induced Growth

The indirect impacts would primarily be caused by land development resulting from construction of the Illiana Corridor. Indirect impacts for this are those actions that are reasonably certain to occur. The analysis completed for the indirect impacts was completed utilizing the standard of reasonably certain to occur. Between the present and 2040, the most notable indirect impact of the Corridor would be to attract development near the proposed interchanges. This induced development is likely to be low density, similar to existing development, unless changed by municipalities through revisions to their comprehensive plans and zoning.

Areas that may incur induced growth are Elwood, Manhattan, Monee, University Park, and Crete, and unincorporated areas of Will County, IL as well as parts of unincorporated Lake County, IN and northern Kankakee County, Illinois and in Indiana, the communities of Lake Dalecarlia and Crown Point.

The land use plans for the various municipalities and counties have been reviewed to determine future development around the proposed project. The development actions listed below for the counties and municipalities are planned and not part of other federal actions and would be expected to occur regardless of the proposed action. The proposed action may accelerate the schedule of these planned developments.

4.1.1 Local Governments and Municipalities

Elwood, IL - The Village of Elwood is approximately 5 miles north of the Illiana Corridor, home to the extensive Center Point Intermodal Center, which will be a major beneficiary of the Corridor. Truck traffic moving product to and from the Center will use the Corridor as well as I-55 and I-80 for access. Most of the activities are contained within the Center and little ancillary development outside the Center property is expected as a result of eventual full build-out of the Center.

Manhattan, IL - Manhattan's planning influence extends southerly to the Corridor almost 10 miles away, and the Village has an existing boundary agreement with Peotone and is working to develop a boundary agreement with the City of Wilmington. Manhattan does not expect much growth this far south in the Village and Will County would probably not permit leapfrog development.

Monee, IL – The Corridor is approximately 6 miles south of Monee. With the construction of the Corridor, more commercial and industrial development is expected along highways, with residential development beyond that. The Corridor will have more impacts as Will County starts to fill in with local roadway infrastructure. The Corridor will give Monee the opportunity to build local road infrastructure while providing regional east-west access. The Corridor will have a positive effect on Monee's future growth and development. The proposed project will enable Monee to develop in

certain ways, and it is up to the Village to determine how to grow. Monee needs to update its Comprehensive Plan to map its future. The Corridor will be a major influence on that Plan. The Corridor could possibly have an effect on restarting the South Suburban Airport (SSA) project.

Village of University Park, IL - The Village is supportive of future expansion of Governors State University and the southerly extension of Metra Commuter Rail to Peotone and possibly to Kankakee County. Based on market demand and implementation of growth policies, the Village expects full build-out by 2030. The Village does not think the Corridor will alter its growth assumptions or plans, since the Corridor is approximately 10 miles south. The Village officials believe that the success of the major proposed projects in the cumulative impacts survey area "will improve the quality of life for regional residents, as well as residents of University Park, by bringing additional jobs and revitalizing the area." Cumulatively they will "improve access to the village and will enhance future development expansion."

Village of Crete, IL - Crete is disappointed that the Corridor is so far south, located seven miles south of the Village Center, as it was expecting that the Corridor in the Village would help spur development of the proposed Center Point Intermodal Center. As a result, the Village does not anticipate much impact from the Corridor. However, the Village feels that there is potential for leap frog development in the unincorporated parts of Will County as the Corridor will provide east-west access to southerly destinations, despite not being an effective bypass for local traffic. Crete does not believe there will be cumulative effects from the Corridor, nor from the Chicago-St. Louis High Speed Rail project. Crete does believe that the gradual development of the SSA, widening of IL-394, and southerly extension of Metra commuter rail would have cumulative effects, such as more traffic.

Unincorporated areas of Will County, IL - The cumulative effects of several planned projects is not fully known, but is likely to prompt dramatic changes in land use and development patterns, create new jobs, improve transportation options and grow the regional economy.

The planned SSA is within the survey area, east of I-57 and IL-50 and west of IL-394/IL-1. The initial phase of airport development is designated on approximately 4,000 acres but the ultimate acquisition area is over 24,000 acres, most of which occurs in unincorporated Will County. The Will County LRMP indicates eight possible locations for "Development Nodes of Office & Hospitality or Industrial and Distribution" surrounding the SSA. These nodes are located near or in the Corridor Monee, Crete, Beecher, and Peotone.

The initial phase of airport development includes one commercial service runway with parallel taxiway, a four-gate passenger terminal with surface access to I-57 and state routes, and support facilities to accommodate air cargo and general aviation activity. Future phased development of the airport includes six primary parallel runways and one commuter general aviation crosswind runway, with a complete parallel taxiway system on all runways; a 120-gate air passenger terminal with access to I-57 and state

routes; and air cargo facilities and general aviation facilities. It is expected that when the initial phase is completed, the airport would operate between 360 and 3,400 flights serving between 19,600 and 169,000 passengers during the first year. Within 5 years, airport travel is anticipated to increase to between 470,000 and 970,000 passengers per year (FAA, 2002a). Preliminary studies on airport alternatives indicate that approximately 1,600 acres would be converted for the initial development of the SSA. Most of the land that would be impacted is currently farmland. It is estimated that 890 acres of farmland would be directly converted to airport use. Approximately 29 acres of wetlands would also be impacted by the airport alternatives for the initial phase of development.

From the Airport's 2002 Tier One FEIS, the full build of the airport would impact approximately 180 to 266 acres of wetlands and approximately 15,660 to 16,570 acres of farmland, depending on the alternative(s) selected.

The Illinois Legislature approved a bill in June 2013 to enable a Public Private Partnership to implement the SSA development plan. The surrounding municipalities wanted the bill to include a development district, as they proposed a decade ago, to mutually plan for and benefit from the development impacts of the airport, including revenue sharing. However, the bill did not include the development district. The municipalities consider the potential cumulative impact of the airport to be far more significant than the Corridor by itself.

Unincorporated areas of Lake County, IN - With increased accessibility to the Corridor in the future, the cumulative impacts of many proposed projects such as the widening of I-65, will affect northwest Indiana. The ability to access the Interstate highway system in Northwest Indiana is critical for most businesses. In addition, rail connections are very important for a subset of companies in their decision to locate in northwest Indiana. Freight rail improvements are particularly important to intermodal centers, the agricultural community, and manufacturing operations. A major freight railroad improvement project – Indiana Gateways Project (also known as the Porter Junction Project) - will result in freight improvements to the region. The Indiana commuter rail system (South Shore Line) is proposed to expand south of Hammond to Munster, and perhaps to Cedar Lake (just north of the Corridor). In addition, there are future plans to extend the West Lake commuter rail line to Lowell, IN.

The Northwest Indiana Forum does not anticipate any spillover development in northwest Indiana from the SSA project; they prefer growth and development at Gary Chicago Airport.

The Forum sees access to water as the biggest challenge to development in the Corridor. The Corridor is outside of the Lake Michigan basin; therefore development will rely on groundwater and the Kankakee River and will require a careful management plan.

One development trend to watch is the concept of "on-shoring" (bringing manufacturing back to the US from abroad). The Forum is seeing more and more advanced manufacturing coming to northwest Indiana. Another trend to watch

includes migration from Illinois to Indiana due to competitive tax advantages. Lastly, changes in international shipping (e.g., Panama Canal widening) will lead to more shipments flowing from east to west in the US. The Illiana creates opportunities for Northwest Indiana to be part of this flow of goods.

The Northwest Indiana Forum believes that regional and international growth trends, and the industrial and commercial jobs that may follow would have a cumulative effect on the Corridor survey area, particularly if the water issue can be resolved.

Areas farther away from the Corridor with access to SR 55 and US 41 may experience development effects, but development impacts are unlikely in the short-term.

Kankakee County, IL - The County does not expect much growth influence from the Corridor, which is approximately seven miles north of its northern boundary with Will County. However, it is considering a proposal for an intermodal center in the northern part of the county on a 500-acre site. The County also is supportive of the project interchange at IL-50 and the possible future extension of Metra into the County, since many commuters now have to drive or take a feeder bus to the current University Park station 30 minutes away. The County expects that the increasing amount of commercial traffic in Kankakee County will be reduced with the Corridor. The County expects the Corridor, SSA and the extension of Metra to Peotone to cumulatively influence development in its northern tier of townships. In addition, the widening of US 45/US 52 from Kathy Drive to Manteno Road and the I-57 at 6000 North Road Interchange are larger projects that should be considered as part of the cumulative effects.

Governors State University (GSU) - Located in University Park, GSU currently has a student enrollment of 6,000. The 2008 master plan anticipates that the size of the student body will double within the next 10-15 years. The 750-acre campus includes nearly 600,000 square feet of facilities. One of the objectives of the campus master plan is to enhance the adjacency of the campus to the University Park Metra Station and develop a transit-oriented campus.

4.1.2 Joliet Arsenal Development Authority (JADA)

The JADA was created as a special district by the Illinois General Assembly to manage the 3,000 acres of the former Joliet Arsenal. Land managed by JADA is located in the northwest portion of the survey area to the north of the Midewin National Tallgrass Prairie. JADA's mission is to dispose of the remaining 400 acres under its control by developing it to its highest and best use. JADA's developments include Elwood CenterPoint Intermodal Facility and an intermodal container repair facility.

4.1.3 Major New Development between the Current Year and the Design Year for the No-Action Alternative

Four intermodal sites exist or are planned within the survey area. As a result of public and private investments, these facilities have combined to create one of the largest inland container ports in the US resulting in efficient operations and convenient onsite services.

The existing or planned intermodal facilities within the survey area are:

- CenterPoint Intermodal Center - Elwood is an existing facility that encompasses 2,500 acres of the former Joliet Arsenal and is projected to create approximately 8,000 new jobs and increase property tax revenue by as much as $27 million per year. The intermodal and associated industrial business park has the capacity for up to 12 million square feet of industrial and distribution facilities.
- CenterPoint (Global IV) Intermodal Center – Joliet is an existing integrated logistics center and inland port on 3,600 acres. The park would also feature up to 20 million square feet of industrial facilities, as well as container/equipment management yards, and is projected to generate more than 14,000 new jobs.
- RidgePort Logistics Center, in Wilmington, IL is a proposed 14-20 million square foot rail-served park located on more than 2,500 acres. The facility parallels the BNSF mainline and I-55. At build out some 20,000 employees would be accommodated on site. Ancillary commercial land uses would be located within a 100-acre area within the RidgePort facility
- The CenterPoint Intermodal Center- Crete is a proposed facility approximately 1,000 acres in size located along the UPRR and CSX Transportation (UPRR, CSX) main line within the survey area. The park would feature up to 300 acres for intermodal and related container/equipment management and 700 acres for an industrial park that can accommodate up to 6 million square feet of warehouse distribution centers, transloading, and/or cross-dock facilities.

Existing intermodal centers in Elwood and Joliet handled more container units in 2008 (3,000,000 TEU, or approximately 1.5 million trucks) than any comparable land-based facility, and all but three of the largest coastal ports in the US. Operations of these existing and proposed facilities are projected to account for 47,000 daily truck movements by 2040. The proposed SSA is expected to include a freight cargo facility, which would add to these numbers. The intermodal facilities are not considered federal actions.

4.2 Eastern Massasauga

4.2.1 Aggregate Effects of the Action

An eastern massasauga population that occurred within the Goodenow Grove Nature Preserve, which is approximately 4.3 miles north of the Corridor, is extirpated. Direct or indirect impacts are not anticipated to this species because the population is extirpated and if reintroduced, the population would be well outside of the Corridor. Known dispersal distance for the eastern massasauga from natal sites has been documented as approximately 9.1 miles (Reinert and Kodrich 1982). No portion of the Goodenow Grove Nature Preserve population will be destroyed as a result of roadway construction activities.

Visual encounter surveys were conducted for reptiles and amphibians in the Corridor. Based on the surveys, the eastern massasauga was not identified within the Corridor (INHS 2013a; Cardno JFNew 2013a). Suitable habitat for the eastern massasauga was not identified within the Corridor in Illinois; however, habitat for this species is present within the Corridor in Indiana (INHS 2013a; Cardno JFNew 2013a). Habitat for the eastern massasauga is shown on Figure 3 in Appendix A. The amount of impact to the suitable habitat for the eastern massasauga totals 2.7 acres for Alternative 1 and 4.0 acres for Alternatives 2 and 3. Suitable habitat for this species is only present within Indiana.

There are no activities that are interrelated to or interdependent with the proposed action.

The potential cumulative impacts in the action area would primarily be caused by land development unrelated to construction of the Illiana Corridor. Between the present and year 2040, the Corridor is expected to attract continuing development. This continued development is likely to be low density, similar to existing developments, unless changed by municipalities through revisions to their comprehensive plans and zoning.

Since the last known population of the massasauga rattlesnake was located within a protected forest preserve site, cumulative impacts would be unlikely as this habitat area is already protected and managed to preserve and conserve natural resources and wildlife.

4.2.2 Conservation Measures

Measures to minimize barriers to animal movement and allow for movement for this species include installing wildlife crossings.

Based on the assessment of the streams and associated riparian areas as well as large wetland complexes within the Corridor, connectivity and reduction of habitat fragmentation through the use of wildlife crossings will be used for those areas that have the highest potential to serve as wildlife corridors.

These crossings will be located at bridges along major riparian corridors and at natural bottom culverts for other drainageways along the length of the project. These natural bottom culverts and bridges will provide safe passage for reptiles and amphibians within the Corridor. This will include wildlife crossings of Pike Creek and an Unnamed Tributary to West Creek, which are located south and southeast of Goodenow Grove Nature Preserve, respectively.

The streams and/or wetland complexes that have the highest potential to provide wildlife corridors across the Corridor were chosen based upon the habitat provided by the stream and its associated riparian areas in the proximity of the Corridor, the presence of endangered or threatened species, or species of concern habitat, the ability to provide connectivity to protected areas (i.e. forest preserves, parks, conservation areas).

Areas identified as having the highest potential to serve as wildlife corridors include the following streams/rivers and associated riparian areas and/or large wetland complexes listed in order from west to east across the Corridor:

- Illinois
  - Kankakee River
  - Unnamed Tributary of the Kankakee River
  - Jordan Creek
  - Forked Creek
  - South Branch Forked Creek
  - Black Walnut Creek
  - Pike Creek
- Indiana
  - Unnamed Tributary of West Creek #2
  - McConnell Ditch
  - Unnamed Tributary of McConnell Ditch
  - Cedar Creek
  - Wetland b-w31-pem (Tributary to Cedar Creek)
  - Unnamed Tributary of Stony Run

IDOT and INDOT will continue to coordinate mitigation options with from the regulatory agencies to determine preferred mitigation methods.

4.3 Sheepnose Mussel

4.3.1 Aggregate Effects of the Action

Direct impacts to the sheepnose mussel are anticipated as part this project. Direct impacts will result from the dewatering of the river, placement of bridge piers within the River, temporary construction activities associated with bridge construction (such as causeways and cofferdams), and translocation efforts to minimize potential impacts to individuals. Five piers will be constructed in the Kankakee River that will total 4,600 square feet of permanent loss of sheepnose mussel habitat. An additional 7,500 square feet of temporary impacts will occur to install temporary cofferdams for pier construction. Temporary causeways will be utilized to construct the bridge. The total area of temporary impact related to the causeway is approximately 2 acres of river bottom. No more than one-half of the river will be closed at any one time. Once construction is completed, the causeways will be removed.

Direct impacts of bridge construction on mussel colonies include siltation and sedimentation of colonies for several hundred feet downstream of the bridge work. Movement of coarse sandy or gravel substrates immediately downstream of temporary causeways can occur due to re-directed water flow at the causeways. Redistribution of coarser substrates may be locally considerable and can bury sensitive mussel species. Redirected flows downstream of temporary causeways can alter where suspended food particles (plankton) are distributed and may impact nutrition of portions of sedentary mussel colonies. Fine sediments may be carried for several hundred feet downstream of

temporary causeways and smother portions of a mussel colony. Lesser fine sediment loads will cause mussels to ingest quantities of fine sediment and expel it as waste material from the mussel's gills, which requires larger amounts of energy to be expended by the mussel with no food value present. If sediment excretion happens late in the season, it may cause mussels to expend stored food reserves that are needed to overwinter.

Construction techniques will result in temporary impacts to habitat. Bridge construction normally utilizes temporary, crushed stone causeways in the river for heavy equipment access. Temporary causeways will bury non-mobile mussel colonies, including any sheepnose mussels present within the area of potential temporary causeways or similar features. Mussel colonies are often diffuse in distribution and clustering of individuals are normally comprised of mixed species and age groups. Fish are generally mobile and will abandon feeding or resting areas when anthropomorphic changes occur, such as placement of causeways.

Dewatering and/or causeway placement would have a direct impact on survival of sheepnose mussels if they are present in the immediate area of such activities. Mussel surveys will determine if mussels are present in the areas of dewatering/causeway placement. If mussels are present in construction areas, mussels will be relocated to appropriate habitat in consultation with federal and state agencies. Dewatering/causeway placement may inhibit host fish that carry larval mussels to temporarily abandon the affected area and force potential host fish that carry larval mussels to other areas of the river. If mussels are relocated to appropriate habitat, host fish will seek the same appropriate habitat and be available for larval mussels. Temporary loss of several hundred lineal feet of potential habitat during dewatering/causeway construction should not unduly stress the host fish due to the abundance of habitat available in the general area near the construction site. Therefore, direct impacts are not anticipated to the sheepnose mussel host fish.

During the relocation efforts, any live native mussel observed in the work area will also be relocated to suitable habitat, preferably upstream. Survival rates of relocated mussels are dependent upon on a variety of factors including appropriate habitat of relocation site, handling of relocated mussels, transplant techniques, and season during which relocation is done. Successful mussel relocations return results that meet or exceed agency guidelines that are determined on a site specific basis when relocated mussels are re-surveyed during successive years. Success of relocations can also be judged when mortality among relocated mussels is not significantly higher than among non-relocated mussels in the same general area.

Shading of the river from the bridge will not effect the sheepnose mussel. Mussels do not utilize visual senses to survive and as a result any shading that will occur would not effect the survival of mussels once the bridge is completed. This species can be found at depths of up to 90 feet in low light or no light. Their method of feeding is by filtering flowing water and there is no need for vision for feeding. Shading will also not effect the host fish species for the sheepnose glochidia as fish will continue to move through

the areas under the bridge and by doing so, provide a host for the glochidia. As a result, there will be no impacts from shading to the reproductive cycle of the sheepnose mussel.

While there may be slight changes to the temperature under the bridge, this will not effect the mussels and fish as the temperature ranges in which they live are affected more by the temperature of flowing water and not the ambient air temperature under the bridge. As the potential shading is limited to a very small area of the Kankakee River, there will be no effects to the mussels and fish from bridge shading.

Construction of the Kankakee River bridge has the potential to impact water resources and habitat for the sheepnose mussel. Typical construction activities would involve various ground disturbing activities including clearing/grubbing, grading, filling, and excavation. The removal of vegetative cover and soil disturbance would increase the potential for erosion and could result in increased sedimentation in nearby streams. Any temporary structures placed in streams may increase turbidity (suspended solids) and temporarily alter downstream hydraulics and substrate conditions. In addition, there is the potential for pollutants, including grease and oil from construction or passenger vehicles and equipment; paint; lubricants; and construction debris to impact water quality in the area. Increased sedimentation, turbidity, or pollutant loads have the potential to affect habitat for the sheepnose mussel within the Kankakee River.

Operational impacts to mussel colonies from the bridge crossing will be in the form of acute or chronic pollution from roadway runoff. Roadway runoff carries increased chlorides during winter, as well as heavy metals, excess nutrients, and increased bacterial loads during precipitation events year-round. The impact to sedentary mussel colonies from these pollutants can be long term if the pollutants build up over time in the immediate substrates, and/or enter the water column or food chain. Impacts to fish are not expected to be pronounced as fish are mobile and will not be exposed to continuous potential stressors at any one site.

A water quality analysis for the Corridor was completed for the Tier Two DEIS using the model developed by Driscoll, Shelley, and Strecker (Driscoll, et al., 1990). The Driscoll et al. (1990) model estimates the magnitude and frequency of occurrence of in-stream concentrations of a pollutant under variable and intermittent highway runoff discharges and is used only for streams with watersheds greater than 1 square mile. The Driscoll et al. (1990) methodology allows for the estimating of waterbody concentrations for 10 constituents and provides the highway runoff concentrations based upon the Average Daily Traffic (ADT). Driscoll et al. (1990) developed a probability function for pollutant concentrations and stream flow to assess a "maximum" (i.e., expected once in 3 years) in-stream concentration. The Driscoll estimated stream concentrations represent concentrations incurred once every 3 years. The Driver method (Driver and Tasker, 1990) is used to calculate pollutant loading in those streams with watersheds less than 1 square mile.

Based on the results of the water quality modeling and analysis, stream impacts were ascertained by comparing the Illinois and Indiana General Use Water Quality standards to a calculated stream concentration. The acute water quality standards for copper, lead,

and zinc would be achieved for all drainage crossings prior to the implementation of BMPs. Chronic water quality standards were also considered; however, a chronic standard applies to four consecutive samples collected over a period of at least 4 days. The computed water quality concentrations represent a once-in-three-year occurrence. Before BMPs were applied to the model, there were locations where the copper, lead, and zinc chronic water quality standards would be exceeded; however, this comparison is offered only as a reference point. The temporal nature of stormwater limits the usage of chronic water quality standards.

Temporary impacts to habitat would result from the placement of temporary causeways and coffer dams. Once construction is completed, these temporary measures will be removed and the river bottom restored as best as possible.

There are no activities that are interrelated to or interdependent with the proposed action.

Indirect impacts to the sheepnose may occur if host fish for larval sheepnose such as the sauger are impacted by the action. Sheepnose spawning occurs in early summer with glochidial release and host attachment in late summer. It is anticipated that in-stream work of crushed stone causeways placement will take place outside of the sheepnose spawning and glochidial release timeframe. Therefore, indirect impacts to host fish species of the sheepnose mussel will be minimized.

Potential cumulative impacts of the Corridor would primarily be caused by land development unrelated to construction of the Illiana Corridor. Between the present and 2040, the most notable impact of the Corridor would be to attract continuing development. This continued development is likely to be low density, similar to existing developments, unless changed by municipalities through revisions to their comprehensive plans and zoning. Development would most likely occur near the proposed interchanges.

The anticipated developments in the vicinity of the Corridor would affect land uses in the survey area and could potentially result in cumulative water quality impacts. Farmland is the predominant land use in the Corridor subwatersheds.

Additional impervious surfaces would be constructed as part of the anticipated development. When undeveloped land is converted to impervious surfaces, stormwater runoff typically increases and infiltration generally decreases. Increased development patterns may affect water quality of streams by contributing increased stormwater runoff and pollutant discharges. Potential changes in water quality resulting from additional development can consist of both reduced pollutant concentrations of some constituents, such as suspended solids, and increases in others, such as heavy metals or chlorides. The impacts on aquatic species in surface waters would be dependent on the combination of site specific factors, such as existing land use, post-construction stormwater management, habitat requirements, and species sensitivity to pollutant concentrations. The pollutant concentrations from proposed developments would be reduced or managed in accordance with federal and state rules/regulations and

applicable county or local stormwater ordinances. As a result, there will be minimal future degradation of waters through implementation of these regulations.

Development has the potential to increase the rate and volume of stormwater runoff and reduce groundwater recharge; however, local, state, and federal regulations are designed to be protective of stream flows and stream quality.

Runoff controls, such as detention, would be provided to compensate for the increased stormwater runoff from the additional impervious area constructed within the Corridor. Future development would also have to provide runoff controls, as required by state and local regulations. To minimize cumulative impacts, BMPs that integrate both water quantity and quality control would be considered, as practicable.

Stormwater from agricultural land is typically untreated and contributes suspended solids and nutrients in runoff to streams. Many of the surface waters crossed by the Corridor are impaired or degraded, but their water quality is anticipated to improve because of watershed management plans, restoration projects, and regulatory action. Notably, the implementation of regulatory controls and the increasing consideration of sustainable policies have shown benefits to water quality. As BMPs are implemented and properly applied, water quality of the degraded streams will likely improve, even with more development.

Additionally, in accordance with the goals of the Clean Water Act, the integrity of the higher quality streams near the Corridor should be maintained with appropriate regulatory controls.

4.3.2 Conservation Measures

Conservation measures for this species will include surveys and relocation of all native mussels to suitable habitat prior to the Kankakee River bridge construction, as well as the use of BMPs to minimize the degradation of water quality within the Kankakee River as a result of the proposed crossing of this river by the Corridor.

During the development of the Tier Two DEIS, a Sustainability Opportunity Areas Technical Memorandum was developed to outline potential practices that will be utilized during construction and during the operation of the roadway after construction is completed (CBBEL 2012). This Technical Memorandum focuses on identifying a variety of post construction BMPs and Opportunity Areas where these BMPs could be implemented to minimize or mitigate potential impacts of the project on wetlands, creeks, and other natural resources and the built environment, specifically this addresses potential impacts to the Kankakee River.

Drainage from the right-of-way would be controlled and treated via a series of BMP swales/basins or infiltration basins. Reduction in pollutant concentrations is based on both the BMPs selected and the particular pollutant. The BMP swales/basins would include gravel bases and native vegetation to reduce pollutant transport. Although detention basins allow deicing salts to pass through because of their ionic nature, they

do lower the peak concentrations of deicing salt that reach the receiving stream by holding and mixing the peak concentrations with other snow melt. The swales also remove particles and associated heavy metals. As water infiltrates in the swale, chloride concentrations and chloride loading directly reaching the stream would be reduced.

Infiltration basins would collect storm water with the goal of infiltrating storm water over a 72-hour period into the soil. This design would remove suspended solids and associated pollutants and provide recharge to the groundwater and adjacent streams. The primary area of use of infiltration basins will be near the Kankakee River. The estimated stormwater pollutant concentrations for zinc, copper, and lead with the proposed BMPs will result in the achievement of the applicable water quality standards in Illinois streams for these pollutants.

In Illinois, the General Use Water Quality Standard for chloride is 500 mg/L, as per 35 Illinois Administrative Code Section 302. In Indiana, the General Use Quality standard is based on hardness values. Based on existing water quality data within this survey area, the chloride standard is 403-418 mg/L chronic; 652-676 mg/L acute, as per in Section 327 IAC 2-1-6 of the Indiana Administrative Code. The effects of deicing activities upon chloride water quality concentrations were estimated for the drainage crossings of the proposed project. Chloride concentrations were based upon salt application rates of 21.7 and 16 tons per lane mile in Illinois and Indiana, respectively. Modeling indicates the resulting chloride concentrations would meet all Illinois and Indiana General Use Water Quality Standards with the exception of two locations in Illinois: an unnamed tributary to the Kankakee River for all three alternatives and an unnamed tributary to Trim Creek for Alternatives 1 and 3. There will be additional reductions in peak concentrations with the proposed BMPs.

BMPs will be utilized to improve the quality of runoff draining into adjacent waterways, with particular attention to the Kankakee River in order to protect sheepnose mussel and the sheepnose mussel host fish species habitat. Stormwater runoff from the proposed bridge over the Kankakee River would be routed to treatment basins on either side of the river. No runoff will be routed directly to the river. Permanent BMPs would be included in the proposed project to ensure that drainage from the proposed bridge over the Kankakee River will continue to achieve General Use Water Quality standards within the river.

Upstream treatment methods, such as treatment forebays and sedimentation basins, have the ability to reduce the required capacity of downstream mechanical devices used for sediment removal. Sediment forebays may be used in proposed detention areas. A sediment forebay is a small pool, typically designed for 5 percent to 10 percent of the total design volume. In many cases, the forebay is designed for first flush and functions as a pretreatment area, to settle sediment before storm water runoff drains into the detention basin.

With the implementation of construction and post-construction stormwater quality/quantity BMPs (e.g., soil erosion and sediment controls), negative impacts to the aquatic environment are anticipated to be minimal. Stormwater quality control could be

accomplished through National Pollutant Discharge Elimination System (NPDES) requirements, including development of Stormwater Pollution Prevention Plans, erosion control plans, and incorporation of Total Maximum Daily Loads (TMDLs) to address impairments in affected watersheds, such as the Kankakee/Iroquois Watershed TMDL. Water quality would be managed through a combination of stormwater runoff and drainage collection facilities and the implementation of other post-construction BMPs. These management techniques would be in accordance with state and federal water quality goals and would be designed to maintain the chemical, physical, and biological integrity of waters of the US and restore water quality of impaired/degraded streams.

4.3.2.1 In-Stream Work (Kankakee River Bridge)

All in-stream work will be performed in accordance with USACE, Chicago District – Regulatory Branch Requirements for In-stream Construction Activities (USACE 2013). This includes the use of non-erodible cofferdams, filtering of dewatering operations, timber/work mats and the use of low ground-pressure equipment for work in wetlands, as much as practical.

The proposed mitigation plan for the project has not been developed at this time and will be formulated after consultation with federal and state agencies. To mitigate potential impacts to mussel species in the Kankakee River, mussel surveys will be conducted prior to construction activities. The surveys will be conducted to relocate all native mussel species from construction impacted areas. The mussels that are found will be located to suitable habitat upstream from the proposed construction so that no construction related activities can impact the relocated mussel populations. Prior to relocation, translocation protocols will be established for the relocation effort that will be approved by the resource agencies.

As previously mentioned, if in-stream work is required, river substrate will be restored to approximate preconstruction conditions in order to restore habitat for aquatic species.

It should be noted that three state listed species of fish are known to occur within the Kankakee River in the Corridor. These species are:

- River Redhorse (State Threatened) - *Moxostoma carinatum*
- Pallid Shiner (State Endangered) - *Hybopsis amnis*
- Western Sand Darter (State Endangered) - *Ammocrypta clarum*

Since fish species are mobile, the direct take of any listed or rare fish species is unlikely as fish will move away from the work area during construction; however, project construction activities could affect spawning activities in the river as well as the reproductive life cycle of the sheepnose mussel. Although little information is available on the timing of reproduction of the sheepnose, the Minnesota DNR references previous studies that indicate female sheepnose mussels may be gravid in earlier part of summer (MNDNR, 2013). Therefore, the release of glochidia could occur during this time frame.

In-stream work within the Kankakee River will not occur during the spawning timeframes of state listed fish species (as listed above) and the known host fish species of the sheepnose mussel, the sauger. This in-stream work limitation may coincide with the release of glochidia from female sheepnose mussels. However, because there is limited data on when the glochidia release takes place, this cannot be stated with certainty.

Therefore, to avoid potential impacts to the state listed fish species, the sauger, and the sheepnose mussel, a date restriction will be established from March 15 to July 15, in which in-stream work within the Kankakee River will not occur.

4.4 Eastern Prairie Fringed Orchid

4.4.1 Aggregate Effects of the Action

A population of eastern prairie fringed orchid is present at Grant Creek Prairie Nature Preserve (USFWS 2010a; Hill 2007), located adjacent to I-55 south of Blodgett, Illinois. The Grant Creek Prairie Nature Preserve is located approximately 3 miles north of the Corridor where the eastern prairie fringed orchid is known to occur approximately 100 feet from MNTP property (Ulaszek and Glass 2001). Direct impacts are not anticipated to occur to this population. No portion of this population will be destroyed as a result of the proposed project.

There are no activities that are interrelated to or interdependent with the proposed action.

The potential cumulative impacts of the Corridor would primarily be caused by land development resulting from construction of the Illiana Corridor. Between the present and year 2040, the most notable indirect impact of the Corridor would be to attract development near the proposed interchanges. This induced development is likely to be low density, similar to existing development, unless changed by municipalities through revisions to their comprehensive plans and zoning.

Induced growth could lead to an increase in artificial lighting within the project vicinity, which could in turn affect the eastern prairie fringed orchid pollinator, the hawkmoth or sphinx moth.

Critical habitat has not been designated for the orchid. Though the eastern prairie fringed orchid is not known to occur within the Corridor, suitable habitat for this species is present and impacts to habitat for this species are anticipated. The proposed project would impact approximately 26 acres of wetlands that have the marginal quality requirements to be considered suitable habitat for the orchid. The approximate 4 acres of high quality wetlands located in Illinois were surveyed for the eastern prairie fringed orchid in which none were found. Specific surveys were not conducted in high quality wetlands in Indiana as the USFWS has indicated that the species is no longer present in Indiana and surveys are not required.

Cumulative effects to the species are not anticipated as suitable habitats are primarily wetlands that are considered to be high quality aquatic resources. The USACE provides protection for high quality aquatic resources in the permitting process. The USACE normally requires applicants to avoid impacts to these types of wetlands. Therefore it is unlikely that impacts to habitat would occur by other related or unrelated actions.

The proposed project could impact the primary pollinator to the orchid, which is the hawkmoth or the sphinx moth (*Lepidoptera – Sphingidae*). The hawkmoth could be negatively affected by stray roadway lighting, which attracts insects and wildlife foraging for insects to roadways. For the Illiana Corridor project, lighting will be limited to interchanges for roadway safety. In places where lighting is required near MNTP and Grant Creek Prairie Nature Preserve, and other areas where the orchid may be present, IDOT and INDOT are developing ways to minimize stray lighting from the roadway by use of directional lighting.

Induced growth near the existing location of the eastern prairie fringed orchid is not anticipated to be significant as the known site is located adjacent to MNTP and the Des Plaines Fish and Wildlife Area, however, the proposed Ridgeport Intermodal facility west of I-55 near the western terminus of the Illiana Corridor will be a future source of stray lighting. Other existing sources of significant lighting in the vicinity of the known eastern prairie fringed orchid site include the ExxonMobil Joliet Refinery and the CenterPoint Intermodal facility, both north of MNTP.

4.4.2 Conservation Measures

Conservation measures for this species will include minimizing stray lighting from the roadway in areas near MNTP, Grant Creek Prairie Nature Preserve, and other areas where the orchid is known to occur. It should be noted that existing non-directional lighting is present within the vicinity of the above mentioned orchid population associated with I-55 and industrial facilities. IDOT and INDOT will determine locations where directional lighting would be used to reduce potential impacts to local hawkmoth and sphinx moths and other wildlife that prey on hawkmoths and sphinx moths.

4.5 Indiana Bat

4.5.1 Aggregate Effects of the Action

The Indiana bat has never been documented within or near the Corridor. Therefore direct impacts to this species are not anticipated as a result of the proposed project. Additionally, direct impacts to hibernating habitat will not occur as hibernacula are not located near the Corridor.

Designated critical habitat exists approximately 44 miles to the west of the survey area in LaSalle County, Illinois. Suitable summer habitat for this species has been identified within the Corridor and impacts to habitat for this species may occur. Impacts to forests, which serve as habitat for the Indiana bat within the Corridor are summarized in Table 4-1.

Table 4-1. Impacts to Forests for the Alternatives

Cover Type	Area within each Alternative (acres) (Percent of Total Area within each Alternative)		
	Alternative 1	Alternative 2	Alternative 3
Forest	78.0	107.7	125.3
	(2.1)	(2.8)	(3.1)
Fencerows	34.5	36.0	39.0
	(0.9)	(0.9)	(1.0)

Source: INHS, 2013b; Cardno JFNew, 2013c.

The habitat within the Corridor is considered to be trees with suitable bark conditions and dead snags that can provide roosting areas for bats. The project will remove some standing snags and other trees. Because of the narrow width of the Corridor, these make up a small percentage of the potential roost trees in the general vicinity.

There are no activities that are interrelated to or interdependent with the proposed action.

Because the Indiana bat is not known to occur within the vicinity of the project, there are not expected to be cumulative impacts to the Indiana bat. Development that is induced from the Illiana Corridor project would also have the potential to remove potential roosting trees in the area. This would reduce potential summer roosting bat habitat in the vicinity of the project; however, as the bat is not known to be present within the vicinity of the project, no cumulative impacts are expected to occur.

The presence of white nose syndrome in Illinois will continue to threaten bat populations throughout the state. According to the USFWS, white nose syndrome is present within southern Indiana.

4.5.2 Conservation Measures

Conservation measures for this species will include minimizing impacts to areas of habitat for Indiana bat within the Corridor as well as conducting all tree removal activities between October 15 and March 31 from areas of potential summer bat habitat. Based on policies, both IDOT and INDOT have tree replacement policies that require the replacement of trees at a minimum ratio of 1:1. Tree replacement will include trees that would be considered suitable for bat roosting in maturity. The details of tree replacement for the Illiana Corridor project will be coordinated with various natural resource agencies and local communities.

4.6 Eryngium Stem Borer Moth

4.6.1 Aggregate Effects of the Action

The Eryngium stem borer moth has been identified within the Corridor in Prairie Sites 1, 3, and 17 (INHS 2013k). Suitable habitat for the moth has been identified at Prairie Sites 1, 2, 3, 4, and 17. Impacts to Prairie Sites 3, 4, and 17 as well as the Eryngium stem borer most host species, the rattlesnake master, are proposed. Therefore, direct impacts to the Eryngium stem borer moth are anticipated as part this project. Direct impacts will result from the conversion of these sites into roadway and temporary construction activities associated with roadway construction within these sites.

Because a grade separation is proposed to carry the roadway over the Canadian National (CN) Railway tracks and IL-50, it is expected that direct impacts to Prairie Sites 3 and 4 between the CN Railway tracks and IL-50 will be minimal. Impacts will occur from construction of the bridge and placement of piers. One bridge pier will be located within Prairie Sites 3 and 4. It is expected the area of impact for Prairie Sites 3 and 4 will be reduced when engineering plans have been advanced and the grade separation is designed in greater detail. In addition to the permanent impact related to the pier construction, temporary impacts will occur as a result of access for equipment to build the piers. The area of the permanent impact for the bridge pier is approximately 400 square feet. Temporary impacts for construction access for the pier is approximately 11,500 square feet.

Prairie Site 17, located in the existing median of the I-55 and IL-129 interchange. This area will be impacted by the Corridor interchange with I-55. The loss of habitat will require the creation of additional habitat for mitigation. Temporary impacts to habitat would result from the placement of access roads and staging areas for the construction of the new interchange. Table 4-2 summarizes impacts to prairie sites where the Eryngium stem borer moth is present and/or where suitable habitat for the Eryngium stem borer moth is present.

Table 4-2. Eryngium Stem Borer Moth Impacts

Prairie Site Number or Location	Total Area (acres)	Alternative 1 Impact Area (acres)	Alternative 2 Impact Area (acres)	Alternative 3 Impact Area (acres)
Illinois				
Prairie Site 1	0.2	0.0	0.0	0.0
Prairie Site 2	0.26	0.0	0.0	0.0
Prairie Site 3	0.37	0.26	0.26	0.26
Prairie Site 4	1.26	0.71	0.71	0.71
Prairie Site 17	4.68	4.68	4.68	4.68
Total	**6.77**	**5.65**	**5.65**	**5.65**

Source: INHS, 2013.

After construction is completed, Prairie Sites 2, 3, and 4 will be impacted in the form of shading effects from the bridge. Shading will lead to a localized change in the plant community that is expected to lower the natural quality of this prairie.

Operational impacts from salt and roadway pollutants may influence the pH of the soil which has been shown to reduce germination and growth of some prairie species (Harrington, 1994). It is possible that the edge habitat created by the roadway where adjacent to Prairie Sites 2, 3, and 4 could lead to invasion by non-native and invasive species that will encroach into the mesic prairie and thus degrade this site (Harrington, 1994).

There are no activities that are interrelated to or interdependent with the proposed action.

Additional cumulative effects from the Illiana Corridor project are not expected to occur as both known locations of the Eryngium stem borer are located within protected IDOT right-of-way or within CN Railway property. Although these populations are located adjacent to high volume roadways and railroad line, they populations appear to be stable; however, during the adult moth stage, there is the potential for moth mortality due to collisions with vehicles and trains. The Corridor would add another high volume roadway into the habitat areas. There have been no studies conducted to determine the effects of vehicles and trains on adult moth populations. In addition, there is little information available that determines the normal flight height of adult moths. As a result, it is unknown whether the elevated portion of the Corridor over Prairie Sites 3 and 4 will have an effect on the adult moth.

4.6.2 Conservation Measures

Conservation measures for this species may include minimizing impacts to areas of habitat for Eryngium stem borer moth within the Corridor as well as coordination with the Illinois DNR for an Incidental Take Permit (ITA) and mitigation measures. Additional mitigation and conservation measures will be developed through the consultation process and the ITA process.

4.7 Northern Long-Eared Bat

4.7.1 Aggregate Effects of the Action

The northern long-eared bat was documented near the Corridor. One northern long-eared bat was captured at Donohue Grove (Site 1) located in Illinois, south of Donahue Road and east of Old Chicago Road, approximately 4.5 miles south of the Corridor (INHS 2013i). Two northern long-eared bats were captured at Cedar Creek (IEN 4) in Indiana, west of Mount Street and south of 161st Avenue within the Corridor (Cardno JFNew 2013). Two northern long-eared bats were captured during the 2009 mist-net surveys along Jackson Creek within MNTP, specific location unknown (McClanahan *et al*. 2009). In addition, supplemental acoustic surveys identified 56 unknown *Myotis* species during mist-net surveys conducted in 2013 for the Illiana Corridor project (Cardno JFNew 2013).

Direct impacts to individuals are not anticipated as a result of the proposed project. To avoid direct impacts to the northern long-eared bat, tree clearing restrictions are proposed that would only allow for tree clearing between October 15 and March 31 when the bats are in their winter hibernacula. Additionally, direct impacts to hibernating habitat will not occur as hibernacula are not located near the Corridor. Direct impacts to habitat are anticipated.

Suitable summer habitat for this species has been identified within the Corridor and impacts to habitat for this species will occur. Impacts to forests, which serve as habitat for the northern long-eared bat within the Corridor are summarized in Table 4-3.

Table 4-3. Impacts to Forests and Fencerows for the Alternatives

Cover Type	Area within each Alternative (acres) (Percent of Total Area within each Alternative)		
	Alternative 1	Alternative 2	Alternative 3
Forest	78.0	107.7	125.3
	(2.1)	(2.8)	(3.1)
Fencerows	34.5	36.0	39.0
	(0.9)	(0.9)	(1.0)

Source: INHS, 2013b; Cardno JFNew, 2013c.

The habitat within the Corridor is considered to be trees with suitable bark conditions and dead snags that can provide roosting areas for bats. The northern long-eared bat is a more habitat generalist than the Indiana bat and has been known to roost in areas other than trees such as buildings and barns. As a result the habitat for the northern long-eared bat is more expansive and not as limited as that of the Indiana bat. The project will remove some standing snags and other trees. Because of the narrow width of the Corridor, these make up a small percentage of the potential roost trees in the general vicinity.

As with the Indiana bat, development that is induced from the Illiana Corridor project would also have the potential to remove potential roosting trees in the area. This would reduce potential summer roosting bat habitat in the vicinity of the project. The presence of white nose syndrome in Illinois will continue to threaten bat populations throughout the state. According to the USFWS, white nose syndrome is present within southern Indiana.

4.7.2 Activities

There are no activities that are interrelated to or interdependent with the proposed action.

4.7.3 Conservation Measures

Conservation measures for this species will include minimizing impacts to areas of habitat for the northern long-eared bat within the Corridor as well as conducting all tree

removal activities between October 15 and March 31 from areas of potential summer bat habitat. Based on policies, both IDOT and INDOT have tree replacement policies that require the replacement of trees at a minimum ratio of 1:1. Tree replacement will include trees that would be considered suitable for bat roosting in maturity. The details of tree replacement for the Illiana Corridor project will be coordinated with various natural resource agencies and local communities.

4.8 General Cumulative Effects

"Cumulative effects" are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02).

Included in the Cumulative Effects Area are Elwood, Manhattan, Monee, University Park, and Crete, and unincorporated areas of Will County, Illinois, as well as parts of unincorporated Lake County, Indiana, and northern Kankakee County, Illinois. In Indiana, the communities of Lake Dalecarlia and Crown Point are in the Cumulative Effects Area.

4.8.1 Additional or Enhanced Freight and Passenger Rail Service

Several passenger rail projects are programmed in the survey area. Only projects that have a high probability of implementation were considered. These projects include:

- University Park – SSA – Kankakee Commuter Rail Service: Proposed commuter rail service from the current University Park terminus of the Metra Electric District Line to the proposed SSA and continuing south, with intermediate stops to a terminus in Kankakee via the CN Railway's right-of-way.
- Southeast Service: Proposed commuter rail service along existing Union Pacific Railroad (UPRR)/CSX freight and passenger railroad tracks, serving 20 communities in south suburban Cook and Will counties.
- Indiana Gateway Project: This project would improve approximately 29 miles of track from the Illinois-Indiana state line to the city of Porter. The Indiana Gateway project consists of eight separate projects, the largest being the Porter Junction project, to improve trackwork that will allow for faster passenger rail service and faster freight shipments throughout the Northwest Indiana region.

The following projects are presently on hold but it is a reasonable assumption that they may be implemented by 2040:

- Metra Southwest Service line (enhanced service; Manhattan to Chicago).
- Extension of the Rock Island District (enhanced service; Joliet to Chicago).
- West Lake Commuter Rail Service: Proposed commuter rail service along existing and abandoned (Metra Electric, South Shore, NS, Indiana Harbor Belt, and Monon

Railroad) freight and passenger railroad tracks from Chicago to Valparaiso and/or Cedar Lake and Lowell.

- Extension of the Metra Southwest Service to MNTP (CMAP fiscally unconstrained portion of the enhanced service).
- Extension of the Metra Rock Island District to Minooka (CMAP fiscally unconstrained portion of the enhanced service).

In addition, the following programmed intercity passenger improvements were considered:

- Existing Amtrak service in Indiana includes the Chicago to Indianapolis service through Dyer, Indiana. NIRPC's 2040 Comprehensive Regional Plan discusses the potential for improved Amtrak service from Chicago to Indianapolis, and the potential for high speed passenger rail service.

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5.0 Determination of Effect

5.1 Hine's Emerald Dragonfly

This project will *not affect* the Hine's emerald dragonfly because suitable habitat for this species is not present within the Corridor. The project will not affect critical habitat because the closest critical habitat unit is located approximately 16 miles north of the Corridor. As the restrictive habitat conditions for this species is not within the Corridor, the species is not present and will not be directed effected by the project. Therefore, there will be no effect to the Hine's emerald dragonfly.

5.2 Eastern Massasauga

This project *is not likely to adversely affect* the eastern massasauga rattlesnake. Although suitable habitat for this species is present within the Corridor, herpetofaunal surveys conducted within suitable habitat in the project survey area did not detect the presence of the eastern massasauga. One extirpated eastern massasauga population is located approximately 4.3 miles from the Corridor within the Goodenow Grove Nature Preserve. This area will not be impacted as a result of construction activities. Wildlife crossings are being considered and proposed for the Corridor which would allow for movement and provide safe passage for reptiles and amphibians. Critical habitat has not been designated for the eastern massasauga.

5.3 Sheepnose mussel

This project *is likely to adversely affect* the sheepnose mussel. Suitable habitat for the sheepnose mussel is present within the Corridor. There are 22 records of sheepnose from the INHS mussel database in the Illinois portion of the Kankakee River that span from 1960 to 2010. A fresh dead specimen of the sheepnose was collected in 2012 approximately 1,200 feet downstream of its confluence with Forked Creek.

Mussel surveys will be conducted prior to the Kankakee River bridge construction. All native mussels found will be relocated to suitable habitat. Translocation of the mussels will minimize adverse effects upon the species. Construction activities will have temporary impacts that will not result in long term changes in habitat for the mussel. Additionally, BMPs will be implemented in proximity to the bridge over the Kankakee River to minimize impacts to water quality. Coordination with the USFWS and the Illinois DNR will be on-going to approve the method for translocation prior to any future surveys or translocation efforts.

5.4 Snuffbox mussel

This project will *not affect* the snuffbox mussel. The snuffbox mussel was reported over a century ago in the Kankakee River; however, subsequent surveys in 1911, 1978, 1975-2000, and 1999 did not detect the species. A single fresh dead specimen was observed in 1988 in Will County. As only relict shells have been identified since 1991, the

population, if present, may be small, localized, and of doubtful viability (Federal Register 2012).

Surveys for unionid mussel fauna associated with streams within the Corridor were conducted at selected locations by the INHS (INHS 2013g). The survey methods for unionid mussel fauna are presented in Section 3.2. No live or relict snuffbox mussels were identified during the 2012 surveys. Streams were surveyed by the INHS in Illinois in May and June of 2012 (INHS 2013g). In the apparent absence of the species, effects to the snuffbox mussel are not anticipated as a result of the proposed project. Critical habitat has not been designated for the snuffbox mussel.

5.5 Eastern Prairie Fringed Orchid

This project *is not likely to adversely affect* the eastern prairie fringed orchid as none of these plants were detected during detailed surveys conducted for the project. The closest known eastern prairie fringed orchid population is present at Grant Creek Prairie Nature Preserve (USFWS 2010a; Hill 2007) adjacent to I-55 south of Blodgett, Illinois located approximately 3 miles north of the Corridor. This population will not be impacted as a result of the proposed project. However, lighting associated with the proposed project could impact the primary pollinator to the orchid which is the hawkmoth. IDOT and INDOT will determine locations where directional lighting would be used to reduce potential impacts to local hawkmoths and other wildlife that prey on hawkmoths.

5.6 Lakeside Daisy

This project will *not affect* the lakeside daisy as suitable habitat for this species is not present within the Corridor. Surveys conducted in 2012 verified that habitat for lakeside daisy is not present in proximity to proposed construction activities. Known populations of lakeside daisy are located approximately 15 miles north of the Corridor.

5.7 Leafy Prairie Clover

This project will *not affect* the leafy-prairie clover as suitable habitat for this species is not present within the Corridor. Surveys conducted in 2012 verified that habitat for the leafy prairie-clover is not present in proximity to proposed construction activities. A population of leafy prairie-clover occurs on MNTP property approximately 5 miles north of the Corridor.

5.8 Mead's Milkweed

This project will *not affect* Mead's milkweed. In Illinois, the INHS conducted botanical surveys within the project Study Area between March 28 and September 31, 2012 (INHS 2013). In Indiana, Cardno JFNew conducted botanical surveys within the project Study Area between September 12 and October 3, 2012 and from April 17 to May 2, 2013 (Cardno JFNew). Mead's milkweed was not identified during the surveys. Search results from the Illinois Natural History Database (INHD) revealed no records of Mead's

milkweed within the survey area (INHS 2013b). The closest population of Mead's milkweed occurs approximately 10 miles north of the Corridor. This population will not be impacted as a result of construction activities. According to the USFWS, at present, there are no viable Mead's milkweed populations in Illinois or Indiana (USFWS 2009). Critical habitat has not been designated for Mead's milkweed.

5.9 Indiana Bat

This project is *not likely to adversely affect* the Indiana bat. Indiana bats' hibernacula are not present within the Corridor. In 2012 and 2013, extensive surveys for the Indiana bat were conducted in suitable habitat within and adjacent to the Corridor. Mist netting for the Indiana bat was conducted at selected locations within the Corridor in Illinois by the INHS and in Indiana by Cardno JFNew (2013). Acoustic surveys were used to supplement mist netting sites in Indiana by detecting bats that were in areas that could not be netted (i.e., woodlot edges, woodlot openings, or open water bodies). No Indiana bats were caught or identified during the mist netting and acoustic surveys. The location of each mist net site and acoustic site are depicted on Figure 5 in Appendix A.

In 2008 the USFWS indicated that the Indiana bat was not likely present in northeastern Illinois. In a letter dated October 23, 2012, the USFWS stated that existing data indicates that the Indiana bat is not likely present in Northeastern Illinois, or if present, occurs in very low numbers (USFWS 2012c). Both letters are included in Appendix M for reference.

There are no known records of the Indiana bat in Will County. Designated critical habitat exists approximately 44 miles to the west in LaSalle County, Illinois. Although Indiana bats often migrate from hibernacula, the only known recoveries of individuals from this location have been well to the south, including a site in northeastern Missouri. Therefore, this population will not be impacted as a result of the proposed project.

Suitable habitat for this species has been identified within the Corridor. The INHS has identified Site E located east of the Kankakee River and south of the Corridor within the survey area as suitable Indiana bat habitat (INHS 2013h). Cardno JFNew identified suitable habitat for the Indiana bat within the project survey area (Cardno JFNew 2013). Figure 5 in Appendix A depicts the locations of Indiana bat habitat within the Corridor.

The project will remove some standing snags and other trees. Impacts to Indiana bat habitat will be minimized by reducing the number of potential roost trees removed for the project, as well as by conducting all tree removal activities between October 15 and March 31 from areas of potential summer bat habitat. Tree replacement will consider the potential for providing suitable roost trees in the Corridor to establish potential new habitat.

5.10 Karner Blue Butterfly

This project will *not affect* the Karner blue butterfly as suitable habitat for this species is not present within the Corridor. In addition, the wild blue lupine is the only food plant for the Karner caterpillar and it is not present within the Corridor. Extant populations in

Indiana are restricted to dune and lake-plain communities associated with Lake Michigan. Critical habitat has not been designated for the Karner blue butterfly; however, one recovery unit is located along the Lake Michigan shoreline within Lake County, Indiana. The nearest population of the Karner blue butterfly is approximately 18 miles north of the Corridor. This population will not be impacted as a result of the proposed project.

5.11 Pitcher's Thistle

This project will *not affect* the Pitcher's thistle as suitable habitat for this species is not present within the Corridor. Surveys conducted in 2012 verified that Pitcher's thistle does not occur in proximity to proposed project. Known populations of Pitcher's thistle are located along the Lake Michigan shoreline, which is approximately 18 miles north of the Corridor. This population will not be impacted as a result of the proposed project.

5.12 Eryngium Stem Borer Moth

This project *is likely to adversely affect* the Eryngium stem borer moth. The Eryngium stem borer moth and suitable habitat for the moth is present within the Corridor. In Illinois, the INHS conducted surveys for the Eryngium stem borer moth where significant stands of the host plant were present based upon prior botanical surveys conducted for this project within the project Study Area (INHS 2013b; INHS 2013k). Based upon these surveys, the presence of the Eryngium stem borer moth was confirmed at three locations (Prairie Sites 1, 3, and 17) and habitat for this species was confirmed at Prairie Sites 1, 2, 3, 4, and 17 (INHS 2013k). As direct impacts are proposed to Prairie Sites 3, 4, and 17, it is anticipated that the Eryngium stem borer moth could be impacted as a result of construction activities and suitable habitat for this species will be impacted as a result of construction activities. Critical habitat has not been designated for the Eryngium stem borer moth.

Conservation measures for this species may include minimizing impacts to areas of habitat for Eryngium stem borer moth within the Corridor as well as coordination with the Illinois DNR for an ITA and mitigation measures.

5.13 Northern Long-Eared Bat

This project is *not likely to adversely affect* the northern long-eared bat. The northern long-eared bat was captured during the 2012 and 2013 mist net surveys conducted for the Indiana bat within and adjacent to the Corridor (INHS 2013c; Cardno JFNew 2013). One northern long-eared bat was captured at Donohue Grove (Site 1) located south of Donahue Road and east of Old Chicago Road, approximately 4.5 miles south of the Corridor in Illinois and two northern long-eared bats were captured at Cedar Creek (IEN 4) located west of Mount Street and south of 161st Avenue within the Corridor in Indiana (INHS 2013c; Cardno JFNew 2013). Two northern long-eared bats were captured during the 2009 mist-net surveys along Jackson Creek within MNTP, specific

locations unknown (McClanahan *et al*. 2009). In addition, supplemental acoustic surveys identified 56 unknown *Myotis* species during mist-net surveys (Cardno JFNew 2013).

Although specific habitat surveys for the northern long-eared bat were not conducted, it is assumed that suitable habitat for this species is present within the Corridor associated with large forested areas, wooded areas associated with Cedar Creek, and wooded corridors that connect to Donohue Grove and MNTP (INHS 2013c; Cardno JFNew 2013).

The project will remove some standing snags and other trees. To avoid direct impacts to the northern long-eared bat, tree removal activities required for the project will occur between October 15 and March 31. During this time frame, bats are most likely in their winter hibernacula and would not be utilizing forested areas for summer roosting and rearing of young. The number of potential roost trees to be removed for the project will also be minimized as much as possible as the project progresses.

Northern long-eared bat hibernacula are not present within the Corridor.

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